

THE
MODERN PRACTICE
OF
PHYSIC;

As improv'd by the Celebrated Professors,

H. BOERHAAVE, and F. HOFFMAN,

Physician to the late and present King of *Prussia*:

BEING

A Translation of the Aphorisms of the former, with the Commentaries of Dr. *Van Swieten*, so far as was necessary to explain the Doctrine laid down; and of such Parts of Dr. *Hoffman's* Works, as supply the Deficiencies of *Boerhaave*, and render the whole Practice of Physic compleat:

Wherein, the various Diseases to which the Human Body is subject, are distinctly consider'd, whence the Diagnostics and Prognostics together with the Method of Cure are regularly deduc'd, and the Prescriptions adapted thereto from *Boerhaave's* *Materia Medica*, are added to every Aphorism.

In Two VOLUMES.

By R. JAMES, M. D.

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T H E

P R E F A C E.

QUINTILIAN, as I remember, lays it down as a maxim, that a relish for the writings of Cicero, is a certain sign of a true taste. And I will venture to affirm, that a person who begins to understand the aphorisms of Boerhaave, has made no small proficiencie in the medicinal art; and that when once he begins to peruse them with delight, he is in the ready road to perfection.

It is greatly to be lamented, that the health and lives of so great a proportion of those who have the misfortune to be visited with sickness in these kingdoms; should either through necessity or choice be committed to the care of those, whose knowledge of distempers and their cures is absolutely and only empirical, founded on the slight perusal of files, or books of receipts, or acquired by a superficial attention to the random practice of a master, in-

structed in the same manner, and to all intents and purposes ignorant of the history of diseases. To prevent, therefore, in some measure, the desolation which such a precarious practice is capable of making in the world, I have ventur'd to publish the following sheets, originally intended for my own improvement, whilst I was, many years ago, endeavouring to instruct myself in that science, which Boerhaave has, particularly in his aphorisms, not only greatly improved, but laid a foundation for its farther advancement. And I flatter myself that the philanthropy peculiar to gentlemen of liberal educations, will prevail on those who have had the advantage of being regularly bred, and stand in no need of such helps as these, to forgive this attempt, in consideration of the advantages it may be attended with to the public. This I mention without the least degree of vanity; because all the merit I can claim, is the conveying the salubrious streams of medicinal knowledge, to those who are unwilling or unable to receive them at the fountain head. And how far I have preserv'd the original purity of the source, I must leave the world to determine.

I have, however, taken care to explain those passages which I thought required it, with proper commentaries, and have added at the end of every aphorism, the prescriptions adapted to them by Boerhaave himself in his Materia Medica. But I must remark, that these are intended neither by the author nor translator, as invariable prescriptions, but rather as illustrations of the doctrine convey'd
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in the aphorisms, or at most examples which the exigencies of almost every case require to be alter'd. I have, farther added dissertations on those distempers which Boerhaave has taken little or no notice of, from the celebrated Frederic Hoffman, physician to the late and present king of Prussia.

The method taken by the illustrious Boerhaave, to explain the nature of diseases, and instruct the student in the histories thereof, is the most easy and simple that can be imagin'd, and the best calculated to answer the end for which it was intended. He begins for example, with disorders to which a solid fibre is subject, simply consider'd as such; and as these can arise from nothing but debility, or rigidity, after treating of these with the utmost accuracy, he proceeds to the disorders of the vessels and viscera arising from the same causes. So far he seems to pursue the doctrine of the antient methodic sect. But because they, in their system, took no notice of the distempers arising from the spontaneous degeneracy of the humours, our author has given us an example of his vast abilities, in the subsequent chapters on the diseases which may arise from a redundance of an acid, or an alcali in the body, including an account of those which are caus'd by a spontaneous visciduity of the juices. And this may be consider'd as a comment, or explication of that important treatise of Hippocrates, ON REGIMEN IN ACUTE DISEASES. He next treats of distempers arising from an excess or defect of the circulation, and from a plethora. Then he proceeds

ceeds to more complex disorders, such as may be excited by any, or all the causes explain'd before; and having treated of obstructions, wounds of all kinds, contusions, fractures, luxations, inflammations, abscesses, fistulas, gangrene, sphacelus, burns, scirrhus, cancer, and disorders of the bones; upon these foundations he erects the doctrine of internal disorders, treating first of acute, and then of chronic distempers.

From such a genius as Boerhaave, with his application, nothing could be expected unworthy the serious attention of every one that is inclin'd to instruct himself in the healing art. But I must take the liberty of recommending in a particular manner his doctrine of the debility and relaxation of the fibres, that of acids and alcalis as productive of diseases; that of inflammations, as of the utmost consequence in practice, and that of the disorders of the liver.

It would be superfluous to anticipate the satisfaction every intelligent reader will find in perusing the aphorisms of Boerhaave. I shall, therefore, only farther observe, that whoever has read and understands the antient fathers of physic, will find, that our author has not only demonstrated, that their observations were strictly just, but that their practice was the very best, in most instances, that could possibly be contriv'd with the materials they were acquainted with; and consequently, that observation and a steady attention to the operations of nature have advanc'd medicinal knowledge infinitely more,

more, than all those plausible theories, and laborious systems, which, to the great prejudice of the physician and the patient, have prevail'd in all ages.

I must not omit taking notice, that Frederic Hoffman, from whom principally I have given an account of the distempers omitted by Boerhaave, was, for many years, professor at Halle in Saxony; where he acquired an uncommon reputation, and was famous for many useful discoveries, relative to mineral waters, which had been absolutely mistaken by all former authors; and for investigating the real virtues of many peculiar springs in Germany, which either were not taken notice of before, or not perfectly understood. His character acquired him the esteem of the late king of Prussia, who made him physician to his person; and the present king of Prussia, upon the decease of his royal father, continued him in the same post, till he died one of the greatest ornaments of his profession. His works in four volumes in Folio, are too well known to the learned, to require any particular account of them.

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THE INTRODUCTION.

1. **E**VERY state and condition of the human body, which is prejudicial to the various functions, whether vital, natural, or animal, is called a disease.

2. That part of the healing-art, which teaches us to discover a disease present in a patient, and directs to a proper method of cure, is called the practice of medicine.

3. The person, therefore, who is ignorant of the circumstances requisite to the exercise of the vital, natural, and animal functions, and consequently is unacquainted with the causes of life and health, cannot know the disorders and defects of these functions ; which are diseases.

4. The cure of a disease (1) is the change of a morbid into a sound or healthy state (2): which supposes an acquaintance with the things mentioned in (3); for which reason the knowledge and cure of diseases require an acquaintance with those doctrines which explain what life and health are, that is, with the principles of physiology.

5. The change specified in (4) excites or directs a certain motion by the application of proper means or instruments which the physician ought perfectly to know, and direct to the destined end; and this supposes an acquaintance with the matter, preparation, and uses of aliments, medicines, and Surgery.

6. The application of the means and instruments, specified in (5), is directed by a fore-knowledge of what effects will afterwards happen in diseases; for

which purpose a general knowledge of those laws, according to which the functions are performed, and consequently of the doctrine of signs, and of the method of cure, is necessary. Hence to a person, who attempts the practice of medicine mentioned in (2), a previous knowledge of all the institutes of physic is necessary. We, therefore, suppose these already known and demonstrated.

7. A disease (1), when present in the body, is the physical effect of a particular determinate cause.

8. The accurate and total removal of this cause produces a cure.

9. The disease is removed by correcting its particular peccant cause; either by remedies which act upon it alone, or by medicines which act equally upon all the parts; the former is called a particular, and the latter an universal cure.

10. Both these methods of cure, mentioned in (9), are discovered by observation, the similitude of disorders, and a proper reasoning from these two sources.

11. Observation is obtained, first, from an accurate history of the disease, relating its causes, nature, and effects. Secondly, from an exact enumeration of those things which prove either beneficial or prejudicial, whether exhibited by accident, or design; and, thirdly, by opening the bodies of those, the state and progress of whose diseases we have observed before their death.

12. A person reasons from similitude, who comparing a disorder before unknown, with things before observed, and consequently known (11), argues concerning the nature and cure of an unknown disease.

13. And, lastly, the person who, from accurate observation, knows all the circumstances which happens to the patient (11), weighs them separately and apart; then compares the whole together, and with what happens in health, and thence, by the strictest ratiocination, acquires a knowledge of the proximate causes of disorders, and of the remedies proper for
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removing them, justly deserves the name of a physician.

14. The most natural method, then, of describing the history, and cure of disorders is, that,

I. Which faithfully, and in just order lays before us the individual, peculiar, common, and maturely considered phenomena of each disorder.

II. Which enumerates every thing that happened to the patient by what he did, eat, retained, evacuated, or used in any manner during the disorder.

III. Which enumerates the casual or designed effects of aliments, operations, and medicines, together with the true methods of using them. And,

IV. That which from the three former, as from data, according to the method of reasoning specified in (13), deduces such conclusions as may be safely received for rules of practice.

15. The multitude of diseases is a great obstacle to the classing them with judgment.

16. But the order in which they ought to be treated is pointed out, first, by the clearer knowledge of the disease. Secondly, by the simplicity of its nature. Thirdly, by the easiness of its cure: and, fourthly, by the necessity of knowing it, in order to understand some other disorder.

17. Governing ourselves, therefore, by the circumstances enumerated in (16), we shall treat of diseases in the following order.

18. We shall first treat of the various species and methods of cure of the most simple disorders.

19. The explication, therefore, and cure of the disorders of the solid parts claim the first place.

20. The first of these are the disorders of the *fibres*, which are of all others the most simple and uncompounded solids.

Diseases of a simple solid Fibre.

21. **T**HOSE parts, which being secreted from the fluids contained in the vessels, and, by the vital powers, together with an highly fine aqueous, or pinguious glue, mutually applied, and united to each other, constitute the smallest fibre, are themselves very minute, simple, terrestrial, and scarce capable of undergoing a change, by the causes which subsist in an human body whilst alive.

22. For this reason, in these (21) most simple elements, considered abstractedly, and in themselves, there is no disease hitherto observed, or said to be cured by physicians.

23. But in the smallest fibre, formed by the union of these (21) elements, the following highly simple diseases (24 to 38) deserve our careful attention, since they frequently occur; and tho' overlooked, or little understood, yet lay a foundation for understanding the nature and causes of others.

Diseases of a Fibre from laxity.

24. **T**HE most minute and simple fibre (23) is said to be weak, when the union of its most minute parts (21), and their tendency to cohesion, are so small, that they may be separated by that gentle motion produced in a state of health, or, at least, by a motion not much greater.

25. This debility (24), or weakness of the most simple and minute fibres, is caused, first, by an obstructed assimilation of the aliments to the nature of the sound vital juices, which is owing to an excessive loss of the laudable humours, and the want of a due action of the solids upon the liquids; or the aliments themselves are of too tenacious a nature to be changed by the powers destined for that purpose. Secondly, This weakness of the fibres is caused by the too faint and languid

languid application of one part (21) to another, which arises from a too weak motion of the fluids; which again is for the most part produced by a defect of muscular motion. Thirdly, This weakness of the fibres may be produced by such a preternatural distraction of them, as almost amounts to a rupture.

26. This weakness of the fibres produces an easy distention and rupture of the vessels (24) composed and made up of them, together with their too faint action upon their contained fluids. Hence arise tumours from the distending, and putrefactions from the stagnating or extravasated fluids, together with all the train of calamities subsequent to these two misfortunes.

27. By rightly understanding what, has been said (24, 25, 26), the present, future, and past disorders of the fibres may be known, their effects may be prognosticated, and proper measures taken for their cure.

28. The cure of relaxed fibres is to be obtained, first, by aliment, which contains abundance of nutritive matter (21), and which is almost so prepared already, as to be nearly in such a state as the nutritive juices are in a sound and robust body. Of this kind the principal are milk, eggs, flesh-broths, decoctions of well-fermented bread, and austere wines, which are to be taken often, but in small quantities.

Every man is nourished by his own milk, and, by the force of the vital principle, from that alone prepares all his other solids and fluids: for in men there is always milk, as well as in women, tho' they have never borne children, nor been nurses. In *miscel. curios. dec. 2. an. 5.* we are told, that milk was drawn from a man of sixty years of age only by suction; and in *miscel. curios. dec. 1. an. 3.* we are informed, that milk was drawn from the breast of a woman, who was not pregnant: for the chyle, which has undergone the action of the heart, lungs and arteries, and is mixed with all the humours, is separated from them by the surprizing structure of the breasts.

Now for these purposes, the best of all others is human milk, since it is most adapted to our natures; for which reason, it is always to be preferred to the milk of other animals. This milk ought to be furnished by a sound woman, who uses due exercise, observes a laudable regimen, and is in the flower of her age. It is also best when the breasts are drawn four or five hours after eating; for then the chyle is changed into concocted milk, and, having laid aside the nature of the aliments, begins to assume that of the human fluids: for there is a great difference in milk, according to the different times at which it is drawn after the last meal. That which is collected in the breasts, immediately after eating or drinking, is crude, and partakes much of the nature of aliments taken; and that which is drawn twelve hours after a meal, is thin, yellowish, and of a somewhat urinous smell, almost like the serum of blood: hence the milk drawn in the middle period, between these two times, is the best.

We must here also observe, that all animals, which use their mothers milk, draw it immediately from the teats; so that it is never exposed to the air, but is conveyed to the tender animals, richly impregnated with all its fine and subtile parts; for highly subtile spirits, elaborated by the last concoction in a sound body, seem to be lodged in milk. This is evinced by the large concurrence of nerves in those parts, where the chyle and milk are prepared; by the subtile steam exhaling from warm milk, newly drawn from animals; and by the surprising changes produced on infants by milk: thus an infant, by sucking the breast of a nurse who was in a furious passion, immediately became convulsed, though before perfectly sound in every respect.

Physicians in all ages have endeavoured to recruit bodies, ready to fall a sacrifice to weakness, by having the subtile exhalations, arising from a sound young body lying in the same bed, conveyed into them. Thus,
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in the first chapter of the first book of the *Chronicles*, we are informed, that the decayed and superannuated body of the pious king *David* was cherished, by laying an healthy young girl in bed with him. When, therefore, the milk is exhibited after it is become quite cold, or again rendered warm by the fire, it is deprived of that highly subtil principle, which was more necessary than all the rest.

Hence *Galen*, in the twelfth chapter of his fifth book, *de method. medend.* uses these words: "The antients ordered a nurse to give the breast to those who laboured under consumptions; and I myself approve of the practice: they also ordered, that the patient should frequently use this milk, and that in such a manner, as that it might not be cooled by the circumambient air." And in the sixth chapter of his seventh book, *de method. medend.* after having said something to the same purpose, he compares milk to the genital seed, which cannot long preserve its virtues out of proper vessels, but ought rather to be retained in the male, or speedily lodged in the female: and certainly that milk is best, which is immediately drawn from the nipples." And afterwards, when ridiculing the peevishness of some persons, he adds, "As they themselves will neither use this milk, nor suffer their children to do so, let them, like asses, use asses milk."

What has been said relative to milk is confirmed by a large number of instances: thus *Capivaccius* informs us, that he preserved the only heir of a noble family, by ordering him to be laid between two wholesome nurses, in the flower of their age, and to suck their breasts. *Forestus*, in the fourth book of his observations, informs us, that at *Bononia* a certain youth was seized with a legitimate marasmus, but that by sucking a beautiful young nurse, with whom he also laid in bed, his decayed and exhausted body was so recruited, that they were afraid, lest, by an unrea-

nable venery, he should lose the strength he had acquired by the use of the milk.

The defect of human milk is best supplied by that of asses, which is succeeded by that of goats, which may again be supplied by that of cows.

Eggs, which, under a slender shell, contain so many miracles, and which, by the observations of the immortal *Malpighi*, have contributed so much to illustrate the generation of animals, are also proper for this end.

The white of an egg, in many respects agreeing with the serum of the human blood, contains in itself a matter, which, by the heat of incubation, being changed within twenty-one days, makes the latent vital stamens of the chick grow to such a bulk; for the yolk is not consumed, and only the white seems subservient to the nourishment of the chick, whilst it remains in the egg.

Hence we may justly affirm, that it contains an excellent nourishment. *Hippocrates*, in the second book *de ratione victus*, informs us, "That eggs contain a principle of a strong, nutritive, and inflating nature: strong, because it produces or generates the animals; nutritive, because it is the milk of the chick; and inflating, because, from a very small bulk, the chick is enlarged to a considerable size."

For this reason, the whites of eggs are recommended for nourishing weak persons; but they are to be diluted with water, in order to destroy their tenacious quality, and moderately seasoned, lest their taste should prove disagreeable. They must be diluted only with tepid water, or milk and water, in equal proportions; for, when prepared with boiling water, they are coagulated into a scissible mass of very difficult digestion.

The whites of eggs fall far short of the use of milk, for, before the white of the egg can nourish the chick, it must undergo the actions of its vessels and viscera, whereas in milk there are highly subtile juices prepared by the animal fabric. Tho'

Tho' the yolk of an egg affords an excellent nourishment, it nevertheless, requires a firm structure of viscera; for, as *Harvey*, after *Aristotle*, has, in his *Exercit. de generat. animal.* justly observed, the chick, some days after its exclusion, uses the yolk, inclosed in its abdomen, as nourishment: but the white is consumed at the time the chick is growing from an invisible molecule to its due bulk. For this reason the white seems more easily convertible into nourishment, than the yolk.

Galen, therefore, seems to have spoken of boiled, and not of raw eggs, when, for weak persons, he principally recommends the yolks, because the white is with difficulty concocted (*δύσπεπτον γὰρ λευχόν*) as is sufficiently obvious from the tenth chapter of the first book of his *method. medend.* where he says the same thing of poached eggs.

Flesh-broths, especially if the animals, whose flesh is used in preparing the broths, have fasted for twenty four hours before they were killed; for then all the crude humours are, by the animal structure, so changed as to assume a due quality. The flesh of killed animals are highly succulent, because, principally, the red part of the blood is only carried off, whilst the other juices remain in them, which, in boiling, being mixed with water, afford to weak bodies a matter already elaborated, and prepared in the body of a sound animal. But in boiling the most subtile parts fly off, which might be retained, if they were boiled in *Papin's* machine. Decoctions, however, prepared in this manner, have a saponaceous, nauseous taste; since the fat, always adhering to flesh, by the violent action of the fire and water, whilst the vessel is also stopped, is so attenuated as to be intimately mixed with the water. Besides, broths prepared in this manner are too rich, and require to be diluted. Hence every thing of a soluble nature ought, as much as possible, to be extracted from flesh, till only the muscular fibres remain, by long boiling, in a long and well-

well-stopped common vessel. When broths of this kind are thoroughly cold a concremented fat generally swims upon their surface, which is carefully to be taken off, lest, as it soon becomes rancid, it should prove offensive to a weak stomach.

It is an unaccountable error, to imagine that broths, destined for these purposes, are the better, the more rich they are; since, in consequence of their insurmountable tenacity, they rather too much load a weak stomach; for which reason a moderate dilution of them is necessary.

But that, by boiling flesh in common vessels, a great deal of their most subtile parts is lost, is sufficiently obvious, from the grateful and refreshing steam arising from the vessels, in which they are boiled, when not close covered.

It is highly probable, that all those animals are the fiercest, which prey upon other live animals: for of this we are certain, that dogs which feed upon raw flesh are more bold than others.

For broths prepared with this intention, the flesh of fowls is generally preferred, then veal, then mutton, and, last of all, Beef. If we except the subtile steam which exhales in common boiling, the other nutritive parts are lodged in the gelatinous portion which the inspissated broth affords. Now it is confirmed by experience, that veal has more of this gelatinous substance than beef; and mutton still somewhat more than veal; the flesh of chicken yields less of this gelatinous substance; but that of old fowls almost doubles the quantity yielded by veal.

The best and most favourable broths are prepared of a due mixture of veal, mutton, beef, and fowls, especially if, after they are prepared, a little lemon or orange-juice is added, in order to remove their tendency to putrefaction.

Decoctions of well-fermented bread are of singular service among those people, who, living in hot countries, have lean and constricted bodies, in whom, in
acute

acute diseases, every thing has a tendency to the highest putrefaction. It is necessary, that, by fermentation, the too glutinous nature of the grain should be destroyed, lest it should prove injurious. In this case decoctions prepared from it, of the thickness of whey, are of singular service; but those made so rich as to have the consistence of cream are less easily digested. To decoctions of this kind grateful aromatics, or a little wine, may be added, by which means they become more restorative.

But we must observe, that these decoctions, prepared from bread, are only advantageous for this reason, that they nearly resemble the chyle, so far as it consists of aliments, but not as it consists of a mixture of the other humours of the human body. Hence these decoctions always partake of a vegetable nature. But, in order to prepare the fluids of an human body from the chyle, the action of the lungs, the other viscera and vessels are required. Hence, in phthical patients, and all others who have too weak lungs, the only hopes of recovery are placed in the use of milk: decoctions of bread, therefore, contain a matter more remote from the highest perfections of nourishment than milk does.

Austere wines. In all wines there is a highly surprising, but at the same time a grateful stimulus, by which they rouse and warm all the parts of the body. If a small quantity of this liquor is drank by a person, not too much accustomed to it, all his senses become quick, his members agile, and his mind cheerful. When the philosopher, exhausted by deep researches, and profound meditations, takes his glass of wine, he is forthwith refreshed, and a new vigour and serenity are restored to his mind. Grateful, sparkling wine, such as Champaign, are possessed of this quality; but their effects do not last for any considerable time; whereas austere wines apply their more firmly cohering spirituous principle to the body, by a more durable action; and at the same time, by their astringent qualities,
strengthen

strengthen the fibres more; for which reason they are, in this case, preferable to the others. The best way of exhibiting them is to soak a piece of biscuit in them, to be eaten every three hours. By this means the virtues of the wine will not be so soon lost, and the flaccid *prima via* will, as it were, be inspired with new life; for there is an uncommon energy and strength in bread and wine. These austere wines are, principally, Florence, rough French wines, and black Greek wines.

These remote materials of nourishment ought to be taken in small quantities. Faults, with respect to this, are often committed; since, by endeavouring to restore these weak and languid bodies, people frequently load and destroy them, by too large a quantity of aliments: what difficulty of breathing is produced, when phthical patients, by eating but a little more than enough, oppress the lungs too much by a fresh quantity of chyle? It is wisely ordered by nature, that infants should take but small quantities of milk at a time, though they have frequent recourse to the breast. Unless therefore this rule be observed, all other means, though in themselves the most conducive to the end, will never be of any service.

From the Materia Medica.

THE matter, in which the elements fit for constituting strong fibres are lodged, is contained in the milk of a sound woman of a due age, and using sufficient exercise and laudable aliments, either sucked from the nipple, or drank warm without undergoing any change from the fire. This is better than all other milks, after the concoction of the nurse is finished. The next to it is that of asses, then that of goats, and then that of cows; all which are to be used in the same manner with that of women's milk. The principles also of strong fibres are contained in the whites of recent eggs as yet warm, diluted in equal quantities of water and milk without the assistance of fire. The elements of strong

strong fibres are also contained in broths prepared of the flesh of sound young and healthy animals, stript of their fat, cut down small, boiled in the Papinian machine, cooled, and in the same machine depurated from the fat and sordes swimming on the surface. If such a machine cannot be had, a kettle may be substituted in its room, but in this the most subtile parts are carried off by exhalation. Hence, perhaps, we see the cause of the fierceness of those animals who feed upon other animals: for these fine, nutritive particles, so adapted to render the animal fibres hard and tense, are preserved, and do not exhale, when the flesh is devoured raw and warm, as they do during coction. Broths prepared of fowls are preferable to others; next to these are broths of veal, then those of mutton, and then those of beef: But broths prepared of a mixture of flesh are reckoned stronger than others.

The decoction of bread.

Take eight ounces of well-fermented wheaten biscuit, and of spring-water three pints; boil for an hour in a close stoppt earthen vessel, always adding as much water as is exhaled in boiling; then strain through a sieve.

Jelly of bread is prepared, if the preceding decoction is exhaled on the fire, till a small quantity of it coagulates, when poured upon a cold stone.

The cremor of bread is prepared, if the above-mentioned decoction, when cold, assumes the consistence of cream.

If a little of the jelly of bread is added to milk, broth, wine, ale, or water, there may be various light kinds of nourishment obtained.

Take of the decoction of bread one pint, of citron juice half an ounce, of distilled cinnamon water two drams, of rhenish wine four ounces, and of sugar

sugar a sufficient quantity for making a decoction which is both grateful and salutary, and of which the patient is to take an ounce warm every hour.

If with this decoction of bread we mix yolks of eggs, we have another kind of aliments, of the same use, but which ought to be eaten more sparingly.

Austere Florence wines, red sharp French wines, and blackish Greek wines, possessed of an astringent taste, are greatly extolled, because they contain a large quantity of a spirit which strengthens and corroborates the fibres.

BOERH. *Mat. Med.*

Secondly, By increasing the motion of the solids and fluids by frictions, gestations on horseback, in a chariot, or a ship, walking, running, and other exercise of the body.

Thirdly, By a gentle compression of the vessels, and repression of the fluids.

Fourthly, By acid and austere medicines, or those of the spirituous, fermented kind, prudently and sparingly used.

All acids, austere medicines, when applied to the tongue, exert their virtues in a sufficiently sensible manner, for they dry the whole mouth, and constrict all the mouths of the exhaling vessels. The tongue also becomes, as it were, contracted, and shorter than before. Hence *Galen*, in the second chapter of his eighth book *de method. medend.* informs us, "That it is the peculiar province of the taste to distinguish astringent substances". For all the medicines of this class have this peculiar to themselves, that, when applied to any part of the body, they make the constituent elements of the fibres approach more nearly, and adhere more strongly to each other; and so powerful are they, that they produce the same effect on the parts of dead animals; for when, by a long maceration, tanners have freed the skins of animals from their

their adhering fat, they are so softened as almost to fall in pieces, but a due strength is restored to them by an addition of austere substances. This *Pliny*, in the 19th chapter of his 13th book, calls *coria perficere* ; where, talking of pomegranates, he tells us, that their bark is principally useful *ad coria perficienda*, for tanning leather. Oak-bark, which is much cheaper, is at present used for this purpose.

The principal vegetables, possessed of this astringent quality, are thus enumerated in *Boerhaave's materia medica*.

The fruit, juice, flower, and bark of *acacia*. The dose of the inspissated juice is from four grains to one dram.

The inspissated juice of floes, called *acacia germanica*, from six grains to a dram and a half.

The juice of (*acetosa*) sorrel.

(*Anserina*) wild tansey.

The fruit and juice of barberries.

Riftort-root.

The fruit, bark, and root of capers.

The immature fruit and leaves of cornelian cherries.

The fruit and leaves of the cypress-tree.

The flowers, fruit, and sponge of the (*cynosbatus*) dog-rose.

Quinces, pears, and marmalade thereof.

The roots of fern.

Strawberry-leaves.

The bark of the ash-tree.

The flowers, fruit, and bark of pomegranates.

St. John's wort, the whole plant.

The inspissated juice of *hypocystis*, from one dram to five drams.

The leaves, flowers, seed and root of the common dock.

The immature fruit of the medlar.

All the sorts of myrobalans, from five grains to two drams.

Myrtle-leaves.

The leaves and flowers of the great water-lilly.

Omphacium.

Burnet.

Purslain.

Sloes.

Unripe pears.

Oak-leaves, and acorns.

Cinquefoil.

Rhubarb, from half a dram to two drams.

The leaves and grains of sumach.

Rose-flowers.

The greater house-leek.

The fruit of the service-tree.

Tamarinds, from one to two ounces: the pulp of them duly pressed and cleansed, from half an ounce to two ounces.

The bark of tamarisk.

Terra-japonica.

Tormentil-root.

From all which infusions, decoctions, extracts, pills, medicated wines, and remedies of various forms, may be easily prepared. Thus, for instance, an infusion may be prepared in the following manner:

Take of wild tansey one handful; of burnet half an handful; and of tormentil-root half an ounce: when they are cut small, infuse them for an hour in a pint and an half of boiling water. The dose is an ounce every three hours throughout the day.

For a Decoction.

Take of the leaves of sharp-pointed dock one handful; of the flowers of red roses four ounces; of tamarisk-bark two ounces; of sorrel-root four ounces; and of the bruised seeds of the common dock two drams: boil for a quarter of an hour in a sufficient quantity of chalybeate-water, for
two

two pints of the strained liquor. The dose is an ounce three or four times a-day.

Or,

Take of sorrel two handfuls; of bistort-root half an ounce; and of pomegranate-flowers two drams: when they are boiled for a quarter of an hour in a sufficient quantity of water, for one pint of the strained liquor, mix with it one ounce of the syrup of myrtles. The use of this preparation is the same with that of the former.

For an electuary.

Take of the marmalade of quinces one ounce; of the conserve of red roses half an ounce; of pomegranate-flowers one dram; and of the syrup of myrtles a sufficient quantity for making an electuary: the dose of which is one dram three or four times a-day.

For an extract.

Take of sorrel eight handfuls; of the garden-dock four handfuls; and of cinquefoil six handfuls; make these ingredients sufficiently clean, cut them small, boil them in a sufficient quantity of water, squeeze them strongly by a press into a large vessel, and let them evaporate to the thickness of an extract; for a dose of which, from one to two drams may be exhibited: or, add to the extract a quantity of dried bistort-root, sufficient for forming it into a mass for pills: the dose of which is from four to fifteen grains.

For a medicated wine.

Take of the bruised seeds of the greater sorrel six drams; of pomegranate-flowers five drams; of the root of capers two ounces; of the bark of the ash-tree ten drams; of the leaves of burnet two handfuls; when they are cut and bruised, in-

Of the diseases of the Fibres.

fuse them in three pints of austere French claret: of which an ounce is to be taken three or four times a day.

Or,

Take of the barks of caper and tamarisk-roots each one ounce; of the flowers and stalks of St. John's-wort two ounces: of these prepare a medicated wine, with three pints of austere red wine.

But among the astringents of the fossile kind, the most valuable is iron dissolved in fermented vegetable acids; by the use of which these tumid, cold, and weak bodies are miraculously restored. By means of this medicine no evacuation of the distending fluid is made, but an additional strength is procured to the vessels; by which being more contracted, they promote the motion of the almost stagnant humours; whereas those, who attempt the cure of these disorders by evacuation, weaken the patient still more and more.

Boerhaave, in his *materia medica*, informs us, that acids, absorbed by earthy substances, are the more powerful the more ponderous the acids are, and the more earth they absorb; and gives us the following catalogue of acido-austere fossiles.

A solution of steel in Rhenish wine; from one to four drams.

A solution of steel in wine-vinegar; from twenty to thirty drops.

A solution of steel in oil of vitriol; from one grain to six.

Red-oker.

White native vitriol; from one grain to four.

Vitriol of tin; from one grain to six.

Roman alum; from one grain to thirty.

Of these, various forms of medicines may be prepared thus:

Take

Take of alum ten grains; of rhubarb five grains; and of pomegranate-peel three grains; reduce to a powder to be taken for one dose.

Or,

Take of the vitriol of mars calcined to whiteness half a dram; of oak-galls ten grains; of tormentil-root one dram; and of the juice of the hypocistis a sufficient quantity for making pills, each of which contains two grains. Of these let the patient take one three or four times a-day.

They who use medicines of this kind perceive a grateful warmth arising over all their bodies; the swelling subsides; the pale colour of the lips and cheeks is changed into a natural and grateful red; the torpor, and difficulty of breathing upon the slightest motions, are removed; their former agility returns; all the functions are invigorated, and a new life is, as it were, restored. The same effect is also produced by iron dissolved in medicinal mineral waters.

Fifthly, By all those means which remove a too violent distraction of the fibres.

29. The laxity of a fibre consists in such a mutual cohesion of the parts (21), as by a small force may be so changed, that the fibre becomes longer than it was before: hence it is obvious, that the laxity of a fibre is a species of weakness (24), and that the flexibility, as also the impaired elasticity of a fibre, depend upon it, as is obvious from what has been already said (21, 22, 23, 24, 25, 26, 27, 28). Thus glass, the most brittle of all bodies, may, by the rules of art, be drawn out into threads more slender and minute than those of a spider's web, which yet cohere; and, by the smallest force, are capable of being twisted in every direction without a rupture. The flexibility of a
C 2 body

body increases in proportion to its slenderness. See *Hist. de l'Academ. Royale*, 1713.

30. From what has been said we may account for the following phænomena, why aqueous and pingui-ous aliments render the fibres weak? why the fibres of such as are of cold habits, young, addicted to ease, and growing, are weak? why earthy and austere substances render the fibres strong? why the fibres of such as are of hot constitutions, and such as use exercise, are also strong? and, lastly, why elasticity is an inseparable concomitant of the strength of the fibres?

Too great rigidity of an animal Fibre.

31. The too great rigidity of a fibre is such an union of its elements, or most minute parts (21), as makes them cohere in such a manner as not to yield to that action of the fluids, which, in order to the preservation of health, ought to overcome this resistance.

32. This rigidity of the fibres (31) is produced by those causes which the cure of a weak fibre requires (28), if they are intense, or continue too long.

33. When a rigidity of the fibres is produced (31), it renders the vessels composed of these fibres less flexible, more narrow, shorter, capable of resisting the motion of the fluids too strongly; and also is attended with all the consequences arising from these circumstances. See (50, 51, 52, 53).

34. From what has been said, (31, 32, 33.) a rigidity of the fibres (31) may be known, its future effects (33) prognosticated, and a proper method of cure discovered.

35. This disorder, then, is removed, first, by aliments and drink of a mild and aqueous nature, especially whey; the softest pot-herbs; diluted, farinaceous, and unfermented liquors.

We call aqueous drink, either water itself, or any other liquor in which water predominates. We call aqueous aliments, such as have water for their most considerable ingredient; such as gruels, broths, and others

others of a like nature. All these apply a large quantity of water to the internal parts of the body, carry it through all the vessels, and soften and lubricate all the parts; for water, especially when tepid, is possessed of a power of softening the hardest parts of animals. Thus horns, hoofs, and even bones, may be rendered soft by warm water.

Hence we observe, that the inhabitants of the hottest climates, who have their bodies highly constricted, are principally fond of water, and aqueous substances. It is not to be wondered at, that whey is here commended, since the use of milk was before ordered for corroborating too weak fibres: for in whey the subtil, spirituous, and caseous parts are wanting, and the aqueous part only remains, which is richly impregnated with the dissolving quality of the grass. For these purposes the best is whey of butter milk, stript of all its pinguious principles, and somewhat sour: hence this liquor is highly useful in all acute diseases. To this class belong all the juices of perfectly ripe summer-fruits.

Boerhaave, in his *materia medica*, specifies the subsequent soft, aqueous substances, which he recommends as proper in the case before us.

Thin decoctions of bread. (See (28. N. 1.)

The Juices of ripe summer-fruits, either crude, or boiled with a little water, and sweetened with sugar.

The juice of oranges.

The juice of elder-berries.

All the kinds of sweet cherries.

Sweet citrons full ripe.

Garden-cucumbers.

Garden-gourds.

Figs.

Strawberries.

Ripe pomegranates.

Jujubes.

Sweet lemons.

Apricots.

Melons.

Mulberries.

Peaches.

Apples possessed of a sweetness together with a kind of acidity.

Sweet plumbs.

Red, white, and black currants.

Rasberries.

From these, many sorts of agreeable aliments may be prepared by boiling, roasting, and other ways of management, thus :

Take of ripe decorticated apples ten ounces ; boil in water for an hour, bruise them and strain through a sieve, and, to twenty-four ounces of the liquor, add of grated nutmeg one dram, of bruised biscuit one ounce, of Rhenish wine two ounces, and of sugar a sufficient quantity.

The softest pot-herbs are enumerated in the *materia medica* of Boerhaave ; and there is neither any great taste nor smell in any of them, but they yield an aqueous and highly emollient kind of mucilage. Broths prepared from these are highly beneficial to persons of this atrabiliarious habit.

The pot-herbs mentioned by Boerhaave are these,

Orache.

Potatoes.

Beets.

Borrage.

Red cabbage.

Earth-nuts.

Chervil.

All the kinds of succory.

Artichokes.

Cucum:

Cucumbers.
 Dandelion.
 Endive.
 Almost oill sorts of lettices.
 Parsnips.
 Purslain.
 Turneps.
 The roots of skirrets.
 The roots of vipers-grafs.
 Spinage.
 The roots of goats-beard.
 Small valerian.

Water drank by persons of constricted bodies, in which the humours are always compact and dense, does not remain long in the body, but is forthwith dissipated. It is often to be lamented in acute diseases, that the water drank by the patient is forthwith carried off either by urine or sweats. But the farinaceous substances mentioned in *Boerhaave's materia medica*, as proper for this purpose when mixt with the water, render it somewhat more viscid; by which means it is retained, and not so soon expelled from the body. This seems to be the reason why *Hippocrates*, in his treatise *de ratione victus in acutis*, condemns the drinking of water in acute disorders, whilst, in the same book, he so warmly recommends the use of ptisan. All these farinaceous substances procure a kind of viscosity to the water, and, by their latent oil, which is capable of being mixt with water, and which may be expressed from them, soften all the parts of the body.

Farinaceous vegetables are these;

Sweet almonds.
 Oats.
 Buck-wheat.
 Barley.
 Mays.
 Millet.

Rice.
Panic.
Pistachios.
Wheat.
Rye.
Spelt-wheat.

From all these, decoctions, cremors, and panadas, may be made, as also from bread (28. N. 1.) From the same substances when crude, emulsions may be also prepared thus:

Take of excorticated oats three ounces, and of sweet almonds one ounce. Make into an emulsion with barley-water, with twenty-four ounces of which mix half an ounce of the syrup of violets, and four drams of distilled cinnamon-water; and of this preparation let the patient take an ounce every hour.

A decoction may be prepared in the following manner:

Take of the recent leaves of borrag, lettuce, and wild valerian, each an handful and an half; of the recent bruised roots of vipers-grass four ounces; and of bruised barley two ounces: boil for a quarter of an hour in water; with every four pints of which mix, of the syrups of marsh-mallows and violets each one ounce; and of this decoction let the patient drink two ounces every hour.

The same is true with respect to the juices of the summer-fruits; for spirituous fermented liquors were justly classed among the remedies for a weakness of the fibres; for, by means of fermentation, from all these are produced those spirituous liquors, which, when reduced to their highest perfection, like a fire, as it were,

were, parch all the solids of the body, and condense the blood into irresoluble masses.

Secondly, By rest, in a somewhat cool and moist air, together with plentiful sleep.

Muscular motion is a principal remedy in the cure of too great a weakness of the fibres; it is not, therefore, to be wondered at, if rest should produce the contrary effect. Those who fatten animals keep them at rest. Hence in acute diseases, where all the parts are rendered highly dry, the antient physicians ordered as much rest as possible, especially in a somewhat cool and moist air; for a cold and dry air corroborates the fibres.

But nothing more relaxes the body, than the warmth of a bed, especially when the patient indulges himself in sleep; for in this case the patient is, as it were, in a bath, consisting of the exhalations arising from his own body: for this reason all animals are somewhat larger after sleep, than they were before. Hence *Hippocrates*, in his second book *de ratione victus*, affirms, "That long sleeps, by the heat they produce, colli-
" quate the flesh, relax the body, and render it weaker."

And, in his treatise *de affectionibus*, he uses these words: "In disorders where dryness is beneficial, it is
" highly conducive to sleep as little as possible: but
" in such as require humidity the patients ought nei-
" ther to want aliments, nor drink, nor to labour
" hard, but to sleep as much as they have a mind."

Thirdly, By unsalted, aqueous remedies, exhibited internally, or applied externally tepid, using in like manner, smooth and mild oleous substances.

The most considerable of aqueous internal remedies, and that which is the basis of all the others, is water, which, when warm, and rising in steams, is capable of softening the hardest parts of animals, to such a degree as almost to dissolve them. In acute diseases, where the skin is often parched and dry, in consequence of a total constriction of the exhaling vessels, the attempts to provoke sweats by the hottest medicines
are

are fruitless and unsuccessful: whereas, when the naked body is exposed to the steams of tepid water, the mouths of the vessels are relaxed, the skin becomes moist, and soon after profuse sweats appear. And, because in these diseases the internal parts are as dry as the skin, clysters of a like nature are to be injected, and aqueous decoctions prepared with farinaceous substances to be exhibited, in order to soften the internal parts. And when, by the long continued use of these aqueous substances, the body is weakened, the opposite disorder, that is, a dropsy, is often induced.

All these aqueous remedies ought to be used tepid; because cold substances condense and corroborate the fibres, and too hot substances coagulate the blood, and burn the solids to a gangrenous crust.

All the medicines of this kind ought to be without salt; because salt indurates all the parts of the body, as is obvious from salted flesh. The medicines of this kind afford a very singular relief.

It is certain, that the skins of animals become flaccid and pliant, when wet with water, but are more rigid when dried, than they were before; but when they are impregnated with oil, they remain soft for a long time, because oil is of an adhesive nature, and not soon dissipated. When the fibres of the intestines are so spasmodically constricted, as to excite the most violent pains, by drinking a large quantity of the softest oils, and injecting clysters of the same, the stricture is removed, and the intestinal fibres are relaxed.

In acute diseases attended with an excessive dryness, and when too great a strength of the solids is produced by the disease, or when the patient has often been in such a state before, those oleous substances would be highly beneficial, if the increased heat of the body did not change these oils, which easily become more rancid, from a mild to a highly acrid nature. In this case, decoctions prepared from these farinaceous substances, enumerated in *Boerhaave's materia medica*, excellently supply the place of oils; for from all these,
espe-

especially when dried, a pure and copious oil may be extracted, by means of a press, which is so united with the mucilaginous part of the decoctions, that it retains the whole emollient quality of the oil, without any danger of becoming rancid.

When an *anchylosis* arises from such an hardness of the ligaments, that they cannot be extended so as to allow the bending of the joints, the rigidity is most successfully removed by duly rubbing all the part affected with a lixivium of soap, so as to render it clean, and capable of perspiring freely. Then it is to be frequently, every day, exposed to the steam of tepid water; after which, the part when dried is to be anointed with the most softening oil, the rigid ligaments are to be gently drawn, and the joint bended; for too great a distraction of the fibres is one of the causes of their weakness: hence, after these measures are taken, it is highly beneficial to extend and lengthen the too rigid parts.

When the ancients attempted to reduce extenuated parts to their natural situation, they stimulated and irritated these parts so as to produce a gentle inflammation and swelling; for, by this means, the humours, being conveyed with a greater impetus, and a brisker motion to the parts, distended the too rigid vessels proportionably the more. By often repeating this irritation, the too great strength of the vessels was so diminished, as to yield to the humours, which, in order to their good state of health, must necessarily flow into them. Thus *Galen*, in the third chapter of his fifth book *de sanitate tuenda*, informs us, "That, by frictions with pingulous substances, he, in a few days, restored the flesh of many, who had been for a long time emaciated."

Hence frictions with pingulous substances are highly proper in these cases, but only to such a degree as to excite a slight and gentle redness of the part; for when the friction is violent, that which it attracts to the part is again carried off; but, in this case, a large distention of the

too strong vessels is required. *Galen*, in the seventh chapter of his seventh book *de method. medend.* gives this caution in the following words: "When, says he, we intend to produce flesh on any part, we are by friction to heat it, so as to render it tumid; but, when we intend to discuss and evacuate, this friction and heat are to be continued till the tumid part subsides". And, in the sixteenth chapter of his fourteenth book *de method. medend.* he tells us, "That it was customary with some, to strike emaciated parts with slender rods slightly anointed, till the parts became moderately tumid." He also informs us, "That, by such a percussion repeated daily, or every other day, together with a moderate pication, the diminutive and extenuated buttocks of children were wonderfully enlarged."

Hence the reason is obvious, why friction sometimes produces opposite effects; for a strong friction with rough dry woollen cloths, especially when impregnated with the fumes of kindled aromatics, cures too weak fibres; whereas a gentle friction with pinguious substances, by attracting the humours, and relaxing the solids, softens too rigid fibres.

Boerhaave, in his *materia medica*, specifies the subsequent aqueous, subfarinaceous, suboleous, soft, and emollient substances, for the case before us.

Water boiled with farinaceous or emollient vegetables.

(35. N. 1.)

Yellow-mallows.

The root, leaves, flowers, and seed of vervain-mallows.

Lady's mantle.

Chickweed.

The flowers, leaves, and root of marsh-mallows.

The ox-eye daisy.

English mercury.

Brank ursine,

Comfrey.

Bugle.

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Bugle.

Common daisy.

Hounds-tongue.

The leaves of henbane.

The roots of white lilies.

Toad-flax.

Flax.

Pile trefoil.

Sweet trefoil.

Common mallows.

The flowers and leaves of melilot.

French mercury.

Pellitory of the wall.

The leaves and buds of the poplar.

Self-heal.

Lung-wort.

The leaves and flowers of elder.

Scabious.

Solomon's seal.

Nightshade.

Orpine.

Stinking trefoil.

Mullein.

The violet.

Kidney vetch.

Fresh butter.

Cream.

The fat of birds, as of a duck, a goose, and a capon.

The marrow of beef.

Softening oils, prepared of mild, farinaceous substances; such as the

Oils of both bitter and sweet almonds.

Linseed-oil.

Oleum mucilaginum.

Olive-oil.

Palm-oil.

Oil of white poppies.

Oil of nightshade.

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Oil of sweet trefoil, and

Oil of violets.

Syrups ; such as the

Syrup of marsh-mallows of *Fernelius*.

Syrup of borragé.

Syrup of maidenhair.

Syrup of jujubes.

Syrup of white and red poppies.

Syrup of comfrey of *Fernelius*, and the

Syrupus violaceus simplex.

Honey of mercury.

Ointments ; such as the

Compound ointment of marsh-mallows.

The golden ointment.

Basilicon, and

Ointment of poplar.

From these may be made proper baths, fomentations, vapours, ointments, decoctions, apozems, and clysters ; but the hounds-tongue and henbane are only safe for external use.

36. Hence are understood the genuine nature and most proper cure of too great an elasticity of the fibres, which is generally the concomitant and effect of rigidity (31).

37. From what has been said, we are, also, enabled to comprehend, why children, women, and those who are addicted to ease, have lax fibres ; whereas adults, men, and such as use exercise, have their fibres, and consequently all their solids, so rigid, that, upon a solution of continuity, their parts are strongly retracted, and drawn from each other.

Simple diseases of the large and small vessels.

38. **A**S the diseases of the most minute vessels proceed from the same causes with those of the simple fibres, by an application, intertexture, or contortion,

tortion, of which (21, 23), they are formed, they must, of course, retain the same nature, produce the same effects, require the same method of cure, and consequently be, in a great measure, understood from what has been already said (from 21 to 38).

39. The larger vessels, composed of the smaller (38), united to each other by application, intertexture, or contortion, are subject to disorders of two kinds; the former of which depends on the diseases of the smallest canals (38), which constitute these larger vessels; so that their origin, nature, effects, and cure, are to be understood from what (38) has been already said: but the other kind of disorders, to which the larger vessels are subject, depends, first, on the degree of force, by which the fluid, moving through them, presses their sides in extending them; which sides, since they consist of other smaller canals, are by this pressure deprived of their fluids, united as to their sides, and grow together in the form of a solid, but thick and gross fibre (21, 23). This same misfortune may be conveyed to the adjacent small vessels. Secondly, The diseases of the latter kind, incident to the larger vessels, depend on the concretion of the fluid, with its proper containing vessel.

40. Hence the weakness, laxity, strength, rigidity, and elasticity of the vessels, concerning which the ignorant and unskilful advance so many absurdities, may be clearly understood.

Diseases arising from a relaxation of the Viscera.

41. **T**HE weakness of the vessels and viscera is such a cohesion of their constituent parts, (23, 38, 39) as may be removed by so slight a motion, that they are incapable of duly performing the several functions requisite for the purposes of life and motion.

42. These

42. These functions of the viscera, requisite for life and health, vary according to the age or sex of the individual.

43. This weakness arises, first, from the weakness of the fibres (24), and the causes producing it (25). Secondly, From the weakness of the most minute vessels (28), and the causes producing it (38). Thirdly, From the languid state of the fluids moving through the larger vessels (39), which depends upon a diminution of their quantity, and augmentation of their aqueous parts, and a languid muscular motion. And fourthly, from the large number of minute canals remaining too long, in proportion to the age of the person.

44. From this weakness (41), produced by its peculiar causes (43), arise many disorders, falsely ascribed to temperament, or accounted hereditary. The most considerable of these disorders are, first, a too easy dilatation and tumours of the vessels; their too easy compression and inanition, and the stagnation of the fluid contained in them; an increased resistance made to the heart; crudity of the fluids; spontaneous corruption; an incapacity of performing the vital, animal, and natural functions. And all the consequences of these, which, as they are infinite in number, so they are with difficulty cured, and highly productive of other disorders, especially a cachexia, and a cacochymia. Secondly, An easy dissolution of the vessels, by external or internal causes, arising either from acrimony or motion; the effusion, stagnation, corruption, or evacuation of the fluids through the ruptured vessels; the corruption of those parts which were kept in a sound state by this motion; and other disorders of various natures, such as a phthisis, an empyema, a dropsy, and an atrophy.

45. The physician, who accurately adverts to these circumstances, (41, 42, 43, 44), will know the origin, presence, and events, not only of this (41), but,
also,

also, of an infinite number of other dark and obscure disorders: and be capable of discovering the most safe and efficacious means of relief.

46. But, in the application of these remedies, the present weakness of the patient demands a slow administration, since a sudden change is in no case more dangerous than in this.

47. These remedies (28) are, therefore, to be slowly and cautiously exhibited, from the first to the last stage of the disorder; and when, by their means, the vessels are corroborated, strong muscular motion is to be used, till from every circumstance it is obvious, that the vessels and viscera are rendered sufficiently compact, solid, and callous.

48. Hence it is evident, that the various doctrines, relating to the qualities of aliments, are of a relative nature; that is, in some cases true, and in others false; that muscular motion corroborates the fibres; that the exercises of gestation resolve the coagulated fluids, and strengthen the relaxed solids, without dissipating the strength; that, in the most robust persons, the blood is highly dense, viscid, and mild; whereas in tender habits it is dissolved, light and acrid; that an infinite number of diseases, apparently widely different, often proceed from the same cause, and are removed when that is taken away.

49. From the same considerations we understand both the knowledge and the cure of too great a laxity of the vessels and viscera.

Disorders of the Viscera, arising from too much stricture or rigidity.

50. **T**HE too great rigidity of the vessels and viscera is such a cohesion of their component parts, (23, 38, 39) as does not yield to that motion, which ought so to move and change them, that those functions, which, in a state of health and life, flowed

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from this changeable state of the vessels and viscera, may be duly performed.

51. This rigidity of the vessels and viscera arises, first, from every cause which renders the fibres too rigid (32). Secondly, But more especially, from an highly compact state of the fibres with each other, produced by the strong force of the propelled fluids. Thirdly, From an union and conjunction of the minute canals, deprived of their fluids by the strong pressure, with which the vital arterial fluid presses the sides of the larger canals; and the most considerable cause, contributing to the production of this effect, is strong and violent muscular motion. Fourthly, From a concretion of the vessels into one solid, with its proper contained fluid, become stagnant, dry, and coagulated.

52. When there is a rigidity of the vessels; first, it produces effects similar to those arising from a rigidity of the fibres (33). Secondly, It produces a strong effort in the vessels, by which the fibres endeavour to apply themselves to the axis of the several canals they compose, to lessen their respective cavities; to press, compress, repel, and expel, their contained fluids; and thus to resist their motion from the heart, and, consequently, the heart itself; to interrupt the equable motion of the blood, and all the secretions from it; to diminish the quantity of the blood, which would otherwise be expelled from the heart at one pulsation; to prevent the perfect evacuation of the heart, and, by that means, to produce suffocations and death. Thirdly, This rigidity of the vessels makes them gape very much when wounded, in consequence of the great force with which they are retracted into the parts which sustain them; and this same rigidity, when the vessels are cut entirely through, either lessens, or entirely closes up, their extremities.

53. From an accurate consideration of what has been said, (31, 32, 33, 34, 35, 36, 37, 50, 51, 52) we may clearly know a past, a present, and a future rigidity, elasticity, and force of the vessels, together with

with the effects they actually do, or afterwards will produce; as, also, the most proper methods of cure;

54. The cure in cases of this nature is obtained,

I. By such remedies as are proper for the cure of too rigid fibres (35).

II. But more especially by such as diminish the quantity, the density, and the compression of the vital fluids.

The quantity of the blood is diminished by venesection.

Its density is diminished, first, by drinking tepid water and whey; secondly, by such methods as diminish its quantity; and, thirdly, by such things as diminish its pressure.

Its pressure is lessened by diminishing, first, its quantity; secondly, its density; and, thirdly, its motion.

III. By such things as suspend muscular motion.

This intention is answered by rest of body and mind.

IV. By such substances as are of a moistening, lenitive, emollient, diluting, resolvent, and abstergent nature.

To moisten the human body, is to fill it with a larger quantity of fluids, than it before contained, and at the same time to dispose it for the retention of this larger quantity. These two intentions, jointly carried on, constitute what we call humectation; for when water is drank, without remaining in the body, the body may, by this means, be said to be washed, but not moistened. Tepid water relaxes all the vessels, but is far more emollient and moistening when boiled with farinaceous substances: thus it renders the vessels less capable of resisting their repletion. This holds true, with respect to the solids of the human body;

but there is a kind of difficulty with respect to the fluids; for the human blood, by the too strong action of the vessels upon it, begins to assume an inflammatory spissitude; and in this case it is not easily mixed with water, which is taken into the body. Thus it is often observed, that, in highly acute disorders, large quantities of water drank pass off by urine and sweat; and a few hours after the urine is as red as before, neither are the symptoms relieved. In this case, the water seems to have flowed through the vessels with the blood, but not to have been intimately mixed with it, since it was forthwith separated from it. In this case, therefore, mild saponaceous substances mixed with water, such as the juices of summer-fruits, mild oils, honey, manna, and sugar, so divide the blood, when prone to a concretion, that the water may be more easily, and more durably mixed with it.

Moistening remedies are such as always have water predominant in them; but such things must be, also, added to them, as convey something of a glutinous viscosity to the water, which would otherwise pass too soon off, such as all farinaceous substances, and emollient herbs. Saponaceous ingredients are also to be added, in order to divide the tenaceous, viscid blood. In *Greece*, decoctions of river-crabs were, from the days of *Hippocrates*, highly celebrated for dry consumptions, which so much raged in that country. In *Italy*, decoctions of vipers-flesh are highly esteemed for this purpose; and, perhaps, in this part of the world, decoctions of eels may be used as a proper *succedaneum* to the former; for, in all these, there is a somewhat viscid, moistening, and mild juice, which, in such dry and parched bodies, is capable of producing almost incredible happy effects. If to these decoctions, of themselves insipid, we add grateful pot-herbs, we have, by that means, a most excellent and perfect remedy.

Moisten-

Moistening liquors are such as consist of a large quantity of water with the admixture of some saponaceous or farinaceous substance, as

1st, Water boiled with the farinaceous substances in (35, N. 1.)

2d, Water boiled with the emollients (35, N. 1.)

3d, Water boiled with the ripe fruits (35, N. 1.)

4th, Water boiled with the pot-herbs (35, N. 1.)

5th, Water boiled with fresh recent fleshes, or with the bones and horns of animals: and,

6th, Water boiled with river-fishes, sea-crabs, oysters, lobsters, and vipers.

Broth of a moistening, lenitive, emollient, and resolvent quality, may be prepared in the following manner:

Take of lean veal, well-bruised, two pounds; and of well-cleansed barley two ounces: boil in eight pints of water for three hours, in a well stoppt vessel, adding towards the end half a pound of recent garden-lettice; of the lambs-lettice four ounces; and of vipers-grass six ounces: then let them boil again for about a quarter of an hour, always adding such a quantity of water, that there may be at last six pints of the decoction.

Broth of river-crabs is to be prepared in the following manner:

Take of live river-crabs three pounds; boil them for an hour in twelve pints of water; then, taking them out, bruise them with their shells, and boil them in the same water for four hours, always adding such a quantity of water, that eight pints of the decoction may at last remain: then express the broth strongly, and put into it, of borage-flowers half an ounce; of bugloss-flowers one ounce;

ounce; of the roots of goats-beard four ounces; and of skirrets two ounces: then let them boil together for the sixteenth part of an hour: of both these preparations let the patient take two ounces and an half every two hours.

A moistening decoction may be prepared in the following manner:

Take of white poppy-seeds bruised one ounce; of entire oats four drams; of red chiches bruised twelve drams; of the flowers of borage, and marsh-mallows, each seven drams; of the roots of vipers-grass two ounces; of the roots of liquorice two drams; of the flowers of mallows, and pellitory of the wall, each half an handful: boil in two pints of water for a quarter of an hour; and then add of the rob of currants and elder each an ounce: of this preparation let the patient take two ounces every hour, during the day-time.

Medicines are said to be lenitive, either with respect to the solids, or the fluids. Those which lenify the solids are such as remove their preternatural rigidity; whereas, those which are lenitive, with respect to the fluids, are such as sheath up every substance of an acrid, stimulating nature, of which kind are the ingredients already enumerated.

Lenitive substances also belong to the class of emollients, only with this difference, that emollients have a relation to the solids; whereas lenitives produce their effects on the solids and fluids, at one and the same time.

Dilution is a word only applicable to the fluids; and when these are diluted, the solids are relaxed. Now, water is the only proper diluent, with respect to the human blood; and all other liquors, commonly called diluents, only operate in consequence of the water they con-

contain. Salts attenuate and resolve, but at the same time do not dilute the fluids; and all spirituous liquors rather coagulate than dilute the juices of the human body. Intensely cold water, as well as that which is boiling, in like manner, coagulates the blood. Hence tepid liquors are of all others the most proper for diluting. Now tepid water may be used in a great many different methods, such as baths, vapours, clysters, and fomentations. Recent whey may also be used in the same manner, and for the same purposes.

Too great a strength of the vessels and viscera is said to be induced, when a large number of vessels, before pervious, are concreted, and grown together. Hence, in order to answer the intention of cure, resolvent substances, with respect to the solids, ought to be possessed of a power of rendering the concreted vessels again open and pervious. But this circumstance is scarcely possible, or, at least, not obtained without the greatest difficulty. Now, resolvent substances, with respect to the fluids, are all such as again disengage the fluid parts now concreted, and reduce them to the molecules, of which they consisted before the concretion. And these substances divide the concreted parts, either by insinuating themselves between them, or by increasing the force of the vessels, in consequence of their stimulating quality. Hence a greater attrition, and frequently the division of the concreted parts, are produced. Sometimes resolvents act in both these manners.

The red blood, when circulating through the whole body, must necessarily pass through vessels, whose diameters do not exceed the tenth part of the thickness of a single hair. But this same blood, when out of the body, is so concreted, that it could not possibly move through the largest canals. Now, a resolvent medicine is, properly, such as is capable of dividing the concreted blood into particles so small, that it may again pass through these minute vessels. Now, as humours of different kinds may be concreted, so re-

solvents of different kinds become necessary; for aqueous diluents resolve mucous, glutinous, gummy, and saponaceous humours. But there are various humours incapable of being resolved in this manner; for human blood is not hindered from concretion by being put in tepid water, whereas most saline resolvents answer this intention: and inflammatory concretions are most effectually resolved by neutral salts, especially nitre, and its preparations, which are not only lighter than sea-salt, but, also, more grateful to the human constitution, and consequently of singular service in almost all acute disorders: alkaline salts are, on the contrary, proper for resolving glutinous and viscid concretions. Saponaceous substances, especially those of a milder kind, such as sugar, honey, and some others, resolve various concretions, without creating any trouble, whereas the chymical saponaceous substances, of a strong and acrid nature, never operate without exciting violent commotions. The operation of all these resolvents is much assisted by frictions, whilst, by the alternate compression and relaxation of the vessels, the resolvents are mixt with the blood, and produce a kind of attrition with the concreted fluids; for it is certain, that, after the use of a vapour-bath, and moderate friction, the internal use of resolvents have often dissipated hard tumours of the glands, which in all appearance seemed impossible to be resolved.

Lenients, according to *Boerhaave*, are such things as remove the hardness, that is, the rigidity of the fibres. See (35.)

Emollients are almost the same with lenients.

Deluents of the most considerable kind are,

1st, Pure water as hot as a sound Body, used either by way of bath, fomentation, vapour, clyster, or drink: and,

2d, Recent whey used in the same manner.

Resolvents are such medicines as again render fluid a concreted substance, which had before been fluid.

Re-

Resolvents are, first, diluents ; secondly, preparations of sea-salt, sal geminæ nitre, sal ammoniac, borax, alkaline salts, whether of a volatile or fixt nature ; acids duly fermented, and substances prepared from them ; such as sal polychrestus, tartarus tartarificatus, the purgative tartar of *Sennertus*, the panacea duplicata of the duke of *Holstein*, antimoniated nitre, and the sal viperarum saturatus of *Tachenius*.

3d, Saponaceous, volatile, spirituous, aromatic, and oleous salts. 4th, Chymical soaps, consisting of distilled oils, and fixed alcalies ; as also common soap, consisting of expressed oils, and a fixed alcali. 5th, Preparations of honey. 6th, The ripe juices of summer-fruit : and, 7th, Mechanical remedies and frictions, &c. All these ingredients may be exhibited in various forms. Thus a mixture may be prepared in the following manner :

Take of distilled water of rue twelve ounces ; of Venetian borax two drams ; of sal volatile oleosum three drams ; and of the purest honey three ounces : mix all together, and let the patient take one ounce every hour, during the day-time.

Drops may be prepared in the following manner :

Take of elixir proprietatis, prepared with salt of tartar, of sal volatile oleosum, and of the purgative salt of *Sennertus*, each half an ounce : let the patient take twenty-five drops in wine three or four times a-day.

Pills, for the same intention, may be prepared thus :

Take of Venice-soap, borax, and the best aloes, each two drams ; make into a mass, and let each pill contain three grains ; and let the patient take one four times every day.

A decoction may be prepared thus :

Take of recent leaves of sope-wort three handfuls ; of brooklime two handfuls ; of fumitory one handful ; of the recent roots of grass and succory each two ounces : boil in water for a quarter of an hour in a close vessel ; strain the liquor through a cloth ; and, when it is depurated by standing, with every three pints of it mix of the rob of elder, and simple oxymel, each two ounces : let the patient drink two ounces of this preparation warm every hour.

A powder, for the same intention, may be prepared thus :

Take of sperma ceti, and borax, each two drams ; make into a powder : to be divided into eight doses, one of which is to be taken every two hours, in a little wine.

When any thing of a viscid, glutinous, or tenacious nature so adheres to the surface of a vessel, as to stop up the natural passage of the fluids, when this is removed, the part is said to be deterged. Hence abstergents, especially all those of the saponaceous kind, are such as resolve the concreted fluids. But, in those vessels where the motion of the fluids is most swift and rapid, such viscid concretions are not generally found, but only in the most minute vessels, or in those receptacles where the humours are collected for certain purposes. But it would be a great error to believe, that all such viscid adhesions are of a morbid nature, since the whole internal mouth, the œsophagus, and stomach, are covered with such a mucus ; and, when it is defective, the most terrible disorders are produced. To the class of abstergents belong all diluent and resolvent substances, especially of the saponaceous kind. These
con-

contribute to the cure of too great a rigidity of the vessels and viscera, because, by removing the obstructions, they procure a free passage of the humours through the vessels. Hence the highly equable circulation neither presses the solids so forcibly against each other, nor condenses the humours so much.

The abstersgents, mentioned by *Boerhaave*, are such medicines as remove glutinous fluids, or half-corrupted solids from the places to which, by their tenacious quality, they adhered : and they are,

1st, Diluents.

2d, Resolvents.

3d, But principally saponaceous, lixivial, and fixed substances, together with preparations of honey and vinegar.

55. From what has been said (from 21 to 55) all the disorders, incident to the solid parts, and their cures, may be understood and explained, since they all depend on a faulty cohesion of the parts : and from this doctrine arise many things of the greatest use in medicine ; since, by this means, we are able to answer the following questions.

What is the diversity of structure in the solid parts, at different ages ? The younger the human body is, the more easily the vessels yield to the impulse of the fluids, and the greater proportion there is of the brain, and of the nerves distributed thence, to the other parts of the body. If we take an accurate survey of the body of a new-born infant, all the parts appear pulposus, soft, and moist ; the palms of the hands, and soles of the feet, are wet with the moisture discharged from the small exhaling vessels : nothing appears dry and callous. But gradually, as the infant advances in years, many of the minute vessels begin to be consolidated : thus the number of the vessels is diminished, and the strength of the solids increased, till, at last, in extreme old age, a strong degree of callosity is induced on the dry body ; and many of the minute vessels

fels are abolished. Hence all the functions, which depend on the motions of the most subtile humours through the smallest vessels, begin to be defective in old persons; and the solids, becoming too rigid, make too strong a resistance to the impelled fluids.

Why does a man grow? *Hippocrates*, in his first book *de victus ratione*, informs us, "That all the parts of the human body exist, and are increased at the same time; and one part is not so sooner or later than another; but the larger parts are discernable sooner than those of the less, though the former did not exist before the latter." For, if they consider the nature and phænomena of generation, pre-existent parts seem only to be enfolded, and take up a larger space. The same holds in the propagation of plants; for the whole plant, to be afterwards raised, lies latent, and, as it were, wrapt up in the seed. Since, therefore, in a tender embryo, a great many vessels are, as it were, intorted and folded up; a resistance to the fluids to be conveyed through these vessels is produced. But fluids, when carried through canals, when they meet with an effort against, or a resistance to their motion, endeavour to distend these canals, and lengthen their sides. Hence an elongation of all the parts happens: and this is growth. But, when all the vessels are unfolded, a smaller resistance is made to the propelled fluids, the circulation through all the canals is free and uninterrupted, and then the lengthening of the vessels ceases, because the motion of the fluids through them is freely carried on, and the sides of the vessels, consolidated by the vital motion, no longer suffer themselves to be distracted by the same force: and in this case the body remains without augmentation or diminution.

This happens because the quantity and impetus of the humours are a balance to the force of the resisting solids; for the human body does not cease to grow, because the solids can be no longer extended, but be-
cause,

cause, in consequence of the unfolding of the vessels, the circulation is rendered so free, that the humours no longer stretch the vessels; for, even in an adult person, when an obstruction happens in any of the vessels, the velocity and quantity of the humours remaining the same, we see the particular parts are increased. This is sufficiently proved by the uterus of a pregnant woman, which is expanded to so large a bulk. And, perhaps, the surprising augmentation of particular parts is owing to some such latent cause.

Why does the body decrease? By the necessary effect of good health such a strength is soon produced in all the vessels, that they gradually begin to make too strong a resistance to the impelled fluids. Hence all the parts are gradually contracted; the whole body becomes dry and parched; and almost the whole fat, which constitutes so great a part of the bulk of the body, is consumed. Hence, in the hands of old persons, we see the tendons almost destitute of all fat. The ligaments, also, between the bodies of the vertebræ, are often so effectually abolished, that the vertebræ touch each other. Hence the tallness of the body is diminished, the spina dorsi is incurvated forwards; and old persons become gibbous, and, at last, die of a marasmus, arising from old age.

Why do men grow faster in the uterus, than at any other period of their lives? That this actually happens is a circumstance, the truth of which we cannot call in question; for in nine months time, from an invisible molecule, the infant grows so large, that its weight is often equal to sixteen pounds, and sometimes more. The reason of this phænomenon seems to be this: the vessels adjacent to the heart, which is strongly moved, are highly tender, and, as many of them are shrivelled up, they make a more forcible resistance to the impelled fluids: hence they are more lengthened and distended. Besides, the whole embryo is continually cherished by the tepid liquor of the

the amnios : hence all the parts are preserved highly lax ; and the nourishment, prepared by the mother's body, is not only continually conveyed to that of the foetus, but, also, equally distributed.

How does a man contract a lax habit of body ? If a person leads an idle, unactive life, indulges himself in sleep, and at the same time uses soft aliments, his body will become preternaturally large, but his strength is not augmented in proportion ; and the vessels are not sufficiently consolidated. Hence they easily yield, and are distended by the impelled fluids.

How does a man become strong ? When the force of the fluids is more than a balance to the strength of the vessels, the body becomes tumid and lax. But when the vessels, strengthened by due exercise, sustain the impetus of the fluids without too great a dilatation, and when this strength of the vessels is a precise balance to the quantity and motion of the fluids, the man is said to be strong ; since in such a person there is a firm cohesion of the solid parts, and a due density of the fluids.

How does a man acquire a rigid habit of body ? The same causes, which render the body strong, continuing to act, will, of course, render it rigid. Age gradually strengthens the tender body of a new-born infant, and exercise imparts strength to the weakest constitutions ; a more advanced age renders all the parts callous and rigid ; and excessive labour brings on all the symptoms of old age, before the due time.

Why is a man of a moist constitution ? The veins of the human body, being easily dilatable, are of course filled with the fresh supplies of fluids taken into the body ; but the firmer strength of the arteries again expels these liquors : for, a sound and vigorous man may drink an incredible quantity of water, which, being received into the veins, is conveyed into the heart ;

heart ; and then, being distributed through the arteries, is expelled from the body ; and, next day, the man recovers his former weight : when, therefore, there is such a weakness of the arteries, that they can neither put the humours, received into the veins, in sufficient motion, nor expel the superfluous juices, then the fluids are accumulated, prevail over the solids, and produce what we call a moist constitution.

Why is a man of a full habit ? A man is said to be full of juices, when his vessels are filled with a larger quantity of laudable humours than is requisite for the purposes of health. In such persons there is such a degree of laxity in the vessels, that they may be filled so far as not to create a disease : but if, in this case, the humours should be increased, or rarefied by heat, or any other cause, health can no longer remain.

Why is a man of a dry habit of body ? This state is produced simply by the increased strength of the vessels. When the arteries are contracted with a greater force than is requisite for perfect health, the fluids are expelled, and the body becomes dry. Hence age, and hard labour, by corroborating the solids, render the body dry.

Why does a man die a natural death ? A natural death is that which, undoubtedly, happens in consequence of the peculiar frame and make of the human body. This happens, because the elements of the fibres are mutually applied to each other, fibres to fibres, membranes to membranes, the sides of the vessels to each other, and the flattened vessels grow to other similar vessels. Thus, at last, almost all the minute vessels being concreted, the circulation of the humours is only carried on through the larger vessels, which, at last, becoming dry, callous, and sometimes cartilaginous, or bony, hinder the free expulsion of the blood from the heart : thus life terminates in a calm.

calm and gentle death. *Lewis Cornaro*, that celebrated model of temperance and mortification, died in this grateful and desirable manner. Hence the boastings of the Chymists are false, and ill-founded, who foolishly promised immortality, or, at least, pretended, that they could protract life at pleasure. This species of gentle death happens by the rest of the heart, when full, and not capable of evacuating its contents into the arteries, which are full, and so rigid, that they cannot be distended by the force of the heart.

What diseases are most incident to different ages? In the first years of life man is most subject to the disorders of the nervous system; because, as we know from experience, the brain, together with its appendages, the spinal marrow, and nerves, bear a larger proportion to the other parts of the body, the younger the body is. Besides, as at this age the brain is less firm, so the nerves, arising from it, are not only soft, but covered with thin membranes, and, consequently, easily affected, and rendered subject to convulsions; for an infant can hardly be seized with the slightest fever, without being, at the same time, thrown into convulsions. Gripes, arising from an acid in the stomach and intestinal tube; an infection, by the small-pox or measles; and every thing which acts forcibly on the organs of sensation, such as a violent noise, or a too strong light, often excite convulsions. And *Sydenham*, when, after dentition, he found children seized with convulsions, prognosticated the small-pox, and those of a good kind. Hence, since at this tender age convulsions are produced by such causes, *Hippocrates* was not very dubious about a cure, before the seventh year of the child's age: but he pronounces them dangerous after that age, because they are produced by more violent causes.

Another source of disorders, which happen in the first years of life, is, that the quantity of the humours is more than a balance to the strength of the solids;

for

for all infants are turgid and moist. Hence happen so easy, and so surprising changes of the humours, which are so often discharged through the skin, in a manner not as yet sufficiently understood. This is obvious from *achors*, *herpes*, excoriations behind the ears, and under the *axillæ*. By these means an incredible quantity of fluids is daily discharged, and an imprudent stop put to such evacuations often lays a foundation for the most terrible disorders..

Then, about the time of puberty, surprising changes happen to the whole body in both sexes; in men tumours of the testicles, and varicose inflations of the seminal vessels, which are easily curable by gentle purgatives, and slight frictions over the steam of kindled amber. And in young women surprising disorders often precede, or accompany, the first eruption of the menses.

Afterwards, when the parts of the body begin to make a stronger resistance, and the vessels are no longer capable of being so easily distended, an equilibrium, or just balance, is produced between the quantity and impetus of the fluids, and the resistance of the vessels. In the mean time, sound viscera continue to generate fresh humours. Hence a rupture of the vessels easily happens, which lays a foundation for hæmorrhages of the nose, and spittings of blood.

In adult persons, the action of the vessels on the fluids is highly strong. Hence their blood is rendered dense and compact, which lays a foundation for acute, inflammatory disorders.

At last, when old age comes on, the solids become more compact; the minute vessels are gradually concreted, and become callous: and all the functions, which depend on the circulation of the most subtile humours through the most minute vessels, are gradually abolished: hence all the actions of the brain and nerves begin to be weakened; the humours degenerate to a cold and phlegmatic state; the circulation is only performed through the larger vessels; and death,

at last, necessarily follows: thus *Galen*, in the third chapter of his sixth book, *de sanitate tuenda*, informs us, "That we become old, and subject to corruption, because we cannot avoid the workings of nature, which becomes gradually more dry."

Hippocrates, in sect. 3, aph. 24, 25, 26, 27, 28, 29, 30, 31, has carefully remarked the diseases incident to different periods of life.

What regimen is best accommodated to the various periods of life? So long as the foetus remains in the womb, it receives the humours prepared from its mother; and, as soon as it is brought into the world, it, by a happy kind of instinct, begins to suck its mother's breasts. The milk, therefore, yielded by these, is of all others the most proper nourishment for infants: when their *dentes incisores* appear, aliments somewhat more solid, but previously reduced to a pap, are to be exhibited; and, according to *Galen*, in the tenth chapter of his first book, *de sanitate tuenda*, they are to be often rubbed, but not with a full stomach: then well-fermented bread reduced to a soft pulp, by an affusion of milk, or flesh-broth, may be properly used; and, when the *dentes molares* have appeared, firmer aliments may be exhibited. But all hot, vinous, and irritating substances are highly prejudicial to infants, because their nervous systems are very delicate and tender.

Children, on account of their voracious appetite, are to have aliments often exhibited to them; and *Hippocrates*, in aphorism 13 and 14 of sect. 1, informs us, that children are, of all others, least capable of bearing hunger. Those who are in a growing state have a great degree of innate heat; and, for that reason, require a large quantity of aliments, lest their bodies should be consumed and wasted away.

For adult and sound persons, the rule laid down by *Hippocrates*, in the sixth book of his *epidemics*, is generally sufficient; which is, not "to eat to satiety,"

“tiety; and to use sufficient exercise.” And, since this age is highly obnoxious to acute distempers, it is obvious, that heating substances are carefully to be avoided, and the aliments ought to be always proportioned to the exercise; for a hardy labourer requires quite different, and more copious aliments, than the philosopher, who applies diligently to his studies.

Since, according to the thirteenth and fourteenth aphorisms of the first section of *Hippocrates*, “Old persons bear hunger easily, have but a small degree of natural heat, and therefore require but little food, since much nourishment extinguishes this heat.” They are, therefore, to have soft aliments frequently exhibited; and, when they become toothless, they are to be sustained almost by milk alone, broths, and eggs.

The moderate use of wine is, in a particular manner, beneficial to them; and is, for this reason, by some called old men’s milk; for, in all fermented liquors, there is something of a surprisingly spirituous nature, which, in a moment, operates in an efficacious manner upon the brain and nerves; but, when imprudently, or too copiously used, it may produce sudden death; or, if it should operate with less violence, it may produce a disorder still more terrible than death itself, which is madness, or some other misfortunes sufficient to render life a burden. This spirituous part, in new and fermenting wines, is a highly efficacious restorative in old age.

Cornaro, every year, in the months of *July* and *August*, had an aversion to all kinds of wine. In consequence of this peculiarity in his constitution, his appetite gradually languished, so that he became quite weak about the middle of *August*; but, upon his drinking the new wine, for the three or four first days of *September*, his strength and vigour returned, notwithstanding his great age.

What method of life is most suitable to different ages? In the first years of life the body is highly

agile; children can scarce remain in a state of rest, but have their health disordered, if they are entirely restrained from their diversions by too strict parents, or tutors: though, when they are too soon inured to hard labour, their bodies are rendered strong, and they die of a callous state of the vessels, induced before the due time. Thus we observe, that country-men, accustomed from their infancy to hard labour, become rigid and callous, like old men, when they are about forty years of age. It is no less a fault, to accustom children too soon to severe studies, since, though they may, at first, give signal proofs of the pregnancy of their genius, yet they either soon after die, or remain stupid, and good for nothing. Instances of this are every-where to be met with.

Adults ought, by proper exercise, to sustain and confirm their strength, lest the body should become languid, and over-burdened with superfluous fat. What advantages accrue to the human body from exercise is sufficiently obvious from experience. *Galen*, in the third chapter of his fifth book *de sanitate tuenda*, for old men, recommends frictions with oil in the morning after sleep, and orders them to use their habitual labours, though without violence; and, as old men are sensible of the smallest errors, with respect to regimen, and young men are scarcely affected by the greatest, he orders the former to use soft aliments often repeated.

What medicines are most proper in the periods of life? Such medicines seem almost only suited to children, as, in some measure, diminish the quantity of their humours. Hence they easily bear gentle purgatives, especially of rhubarb. Those substances are, also, beneficial to them, which have a tendency to correct an acid acrimony, such as the absorbent powder of crabs-eyes, and others of a like nature. Such medicines are excellently suited to infants, as check the irritation of the nervous system, and at the same time moderately corroborate the solids: hence rhubarb,

barb, with crabs-eyes, and a little cinnamon, is a medicine excellently suited to the condition of infants. Then, when they advance in years, such medicines are never to be exhibited, as by their stimulus render the circulation of the humours too brisk, lest the tender vessels should, by that means, be ruptured. In the years of maturity, those medicines are most proper, which remove that propensity, which the humours have, to assume an inflammatory spissitude. Old age, on the contrary, which, according to *Galen*, in the ninth chapter of his fifth book *de sanitate tuenda*, "is nothing, but a dry and cold habit of body, brought on by time," requires moistening and gently nutritive medicines, with the addition of grateful, stimulating, and spirituous substances, but always mixed with such as are of a moistening quality.

Of what certainty and use is the doctrine of stricture and relaxation in the solids? After medicine was divided into two sects, each of which had its followers, some, contending that the art was built upon experience alone, maintained, that a knowledge of evident causes was necessary; but affirmed, that disputes about obscure causes, and natural actions, were superfluous; and asserted, that medicine was not invented after reasoning; but that, after medicine was discovered, the reasons of phænomena were found out. Hence this sect maintained, that experience was alone necessary, and its followers were called Empirics. Others, who were called Rational, did not deny the necessity of experience, but affirmed, that it could not be obtained without some previous reasoning. Besides, they affirmed, that a knowledge of the remote and latent, as well as evident causes of diseases was necessary; as also a knowledge of the natural actions, and consequently of the internal parts.

Among the Rational, or dogmatic sect, *Themison*, one of the followers of *Asclepiades*; and after him others, reduced this difficult art to a kind of brief system; and asserted, that the knowledge of no cause

contributed to the cure of diseases; and that it was sufficient to be acquainted with some circumstances, which distempers had in common; and that these were of three kinds, that is, stricture, fluxion or a mixture of these; because sometimes the sick discharged too little, at other times too much, and at other times too little in one part, and too much in another.

This was the origin of the doctrine of stricture and relaxation, concerning which *Prosper Alpinus*, in his *medicina methodica*, afterwards treated fully. Many things, relating to this doctrine, also occur in *Cælius Aurelianus*, who was of the methodic sect.

But stricture and relaxation can only properly happen in the solids, nor could they easily explain the diseases of the humours from these: it is, therefore, of great importance in medicine, to consider the change of cohesion in the solid parts; nor yet can all diseases be deduced from it, as the methodic sect maintained.

Whence are we to take our most certain marks of a due degree of stricture and relaxation? When, after copious eating and drinking, and the being exposed to the moist air, the body either does not become tumid, or does not remain long so, we know that the vessels and viscera have a due degree of strength; by which the superfluous quantity of distending liquors is soon expelled from the body. When the body of an adult person does not gradually decrease, by the too great contraction of the vessels, and the consequent expulsion of the fluids, we then know, that an equilibrium between the solids and fluids prevails. If, upon a copious use of aliments, the body immediately becomes tumid, we know that the vessels are too weak, and too easily dilated. If all the parts are lean, dry, and parched, we justly conclude, that the vessels are too strong.

56. We should now treat of wounds (16), and then of the most simple disorders of the solids: but, as a wound is always accompanied with spontaneous,
pec-

precant qualities of the fluids, we shall first consider these, since they ought to be known before we attempt to give the history of wounds.

57. Hence we shall first treat of those disorders of the fluids, which arise spontaneously in them, either when they are left to themselves, without any regard to the vessels; or which are excited by any fault, or too slow a motion of the vital fluids.

Of the most simple and spontaneous disorders in the Humours.

58. **A**LL the humours found in a human body whilst alive are either crude, and retain the nature of the aliments from which they were formed; or else, by the force of the natural actions, and their mixture with the other fluids, are assimilated, and acquire the nature of the rest of our liquids.

59. All these humours (58) are formed from vegetables, or from other animals.

Spontaneous diseases from an acid Humour.

60. **O**UR liquors, which are formed from farinaceous vegetables, or ripe fruits, raw or fermented, when superior to the vital powers, acquire in us such a disposition, as arises from their peculiar nature, when exposed to heat attended with moisture. Hence principally an acid acrimony, and pinguious viscosity are excited. The former is principally caused by fermented and unfermented acedent aliment; the latter by farinaceous aliment not fermented, nor boiled; those also which by their austerity cause a tenacity of the humours, have such a tendency.

61. This acid acrimony (60) is caused,

1st, By aliments consisting of farinaceous, succulent acids, fresh, crude, fermenting, or fermented parts of vegetables.

2d, By a deficiency of good blood in the body which takes in these aliments.

3d, By a debility of the fibrous texture (24, 29, 41) of the vessels and viscera.

4th, By a defect of animal motion, as in children.

62. The seat of this acid acrimony is originally the organs of the first digestion, from whence by slow degrees it infects the blood, and, lastly, all the humours.

63. This acidity produces acid eructations, hunger, vellications of the stomach, and heart-burning, iliac pains, flatulencies, spasms, inactivity of the bile, and various changes thereof, acid chyle, and stools of an acid smell. Such are the effects of an acid in the stomach and intestines.

64. Acidity in the blood produces paleness, an acid chylous serum, acid milk in women, acid sweats, and acid saliva; hence arise itchings, obstructions, pustules, ulcers, coagulations of the milk and blood, ineptitude of the blood for circulation, irritations of brain and nerves; hence convulsions, a disturbed circulation, and death.

65. From what has been said (60, 61, 62, 63, 64, 65) a present, future, and past acid temperament may be distinguished; the effects, also, may be predicted; and the method of cure may be understood.

66. The cure is performed,

1st, By anti-acid aliments of animals or vegetables.

Such are broths made of the flesh of birds, quadrupeds, or fish; jellies made of the same; and the flesh of these, which best answers this end when roasted. Wee with a little alkaline salt.

With the aliments specified above, *Boerhaave* advises, every three hours, an ounce of the following wine,

Take salt of wormwood two drams, and French white wine fourteen ounces.

The anti-acid vegetables mentioned by *Boerhaave* are these,

Wormwood.

Jack by the hedge, or sauce all alone.

Garlic.

Dill.

Wholesome wolf-bane.

Angelica.

Anise.

Sellery.

Long Birth-wort.

Round Birth-wort,

Wild radish.

Cuckow-pint.

Swallow-wort.

Asparagus.

White asphodel.

Basil.

Cabbage.

Aromatic reed.

Calamint.

Carduus benedictus.

Lady's thistle.

Carraways.

Avens.

Cloves.

Scurvy-grafs.

Onions.

Lesser centaury.

Wild carrot.

Rocket.

Eryngo.

Hedge-mustard.

Hemp-agrimony.

Greater galangals.

Lesser galangals.

Elecampane.

Dittander,

Marjoram.
 Horehound.
 Feverfew.
 Mezereon.
 Navew-gentle.
 Cresses.
 Cat-mint, or nep.
 Origany.
 Pepper.
 Leeks.
 Pellitory of Spain.
 Radish.
 Rue.
 Soap-wort.
 Satyrion.
 Mother of thyme.
 Savin.
 Savory.
 Acrid vermiculated houseleek.
 Mustard.
 Squill.
 Thyme.
 Treacle-mustard.
 Spotted ramsons.
 Nettles.
 Zedoary.
 Ginger.

2d, By such juices as approach near to the nature of good blood, formed from rapacious birds.

Such, both of the large and smaller kinds, are those which feed on insects, but especially such birds as are devourers of fish, as the duck, goose, sparrow, chaffinch, thrush, partridge, gull, and quail; the eggs of all these.

3d, By corroborants. These are

Such as communicate an elastic force to the fibres, vessels, membranes, and viscera (28, N. 1, 4) as also fermented

fermented spirituous liquors, generous ales, wines, hydromel, and spirits of wine.

4th, By strong motion.

5th, By medicines which absorb, dilute, obtund, and induce a change in the acid.

Absorbents of acids are such substances, as, when immersed in acids, deprive them of their acrimony in such a manner that they cannot operate either as acids, or acrids; while, in the mean time, they have themselves no manner of acrimony which can do the body any injury; hence they are often preferred to other medicines. Only they are pernicious, when, by mixing with the inert pituitous matter, they become noxious by their bulk and weight.

Such are dried bones of fish; the jaw-bone of the pike, the eyes, claws, and shells of crabs and lobsters.

Oyster and muscle-shells, &c.

Coral, pearl, and mother of pearl.

Chalk, bole, osteocolla, and marle.

Blood-stone, in a dose of fifteen grains.

Filings of tin, eight grains for a dose.

Filings of iron, twelve grains for a dose.

Diluent is water and aqueous substances, as mentioned under 54, N. 4.

Obtundants are such as, by their soft lentor, insipifate the acrid acids in such manner as, by obtunding their spiculæ, or sharp points, to divest them of every noxious quality, and at the same time to defend the membranes from all injury; as also to remove the effects already produced by them. Only sometimes they are injurious to such, whose too lax contexture of body may be thereby farther weakened.

These are, 1st, oleous substances, as

Sweet and bitter almonds.

Pistachio-nuts.

Common nuts, walnuts and cocoa-nuts.

White poppy-seeds.

The expressed oils of these and of olives, &c.

2d, Gelatinous substances, as jellies of flesh and fish.

3d, Such

3d, Such oleous aromatics as are lenient, on account of their oil. (See 66, N. 1.) and a great many preparations from these.

Substances which induce a change in the acid; these are such as, being mixed with it, immediately produce an effervescence, and consequently excite motion, stimulate and irritate the fibres; but afterwards, uniting with the acid, constitute a new species of salt, in which there still remains a stimulating, diaphoretic, diuretic, and resolvent quality. They are only pernicious to those who are already injured by too great a degree of motion.

Fixed alkaline salts, procured from burnt vegetables of any kind, in a dose of six grains.

Volatile salts procured from the distillation of animals, putrified vegetables, or recent anti-acid plants, (see 66, N. 1.) in a dose of ten grains.

Fixed saponaceous substances, as venice-soap, &c. in a dose of one dram.

Saponaceous volatile substances, in a dose of half a dram.

Of these last there are three principal sorts:

1st, Volatile, oily, saline spirits, distilled from blood, urine, hartshorn, silk, &c.

2d, The *offa belmontiana* from a very pure alcohol of wine, and very strong spirits of sal ammoniac mixed and united by distillation.

3d, The strongest alkaline volatile salts often sublimated, and intimately united with aromatic oils: for instance,

Take of very pure, dry salt of hartshorn one ounce;
and of distilled oil of citron-peel one dram: sublime in a tall glass-vessel, and let this operation be repeated a sufficient number of times.

67. The choice, preparation, dose, and timely application of these remedies will be known to the physician,

fician, from a knowledge of the disease, its seat, and the condition of the patient.

68. From what has been said it is obvious, why children, such as use little exercise, virgins, poor people, and some sorts of artificers, much conversant with acids, are very subject to diseases from a redundant acid.

Diseases from a spontaneous Viscidity.

69. **A** PINGUIOUS viscosity, from vegetable aliment is caused,

First, By a diet of crude and unfermented farinaceous substances, and austere immature vegetables. For the meal of farinaceous vegetables, mixed with water, forms a viscid kind of paste, but fermentation destroys this viscosity.

Secondly, By a defect of good blood, a sufficient quantity of which is necessary to the assimilation of the aliments, and the conversion of their juices into good blood.

Thirdly, By a debility of the vessels and viscera, or a defect and inactivity of the bile; which last is very powerful, when in a due state and quantity, in attenuating the viscosity of alimentary substances.

Fourthly, By a diminution of animal motion; for motion strengthens the solids, attenuates the fluids, and promotes due digestion and assimilation of the aliments.

Fifthly, By a dissipation of the most fluid parts of the blood, through the relaxed secreting vessels, for it is evident, that when the most fluid parts are lost, what remains must become more thick and viscid. Hence the error of those is obvious, who preposterously carry off the finest particles of the blood by enormous quantities of sudorifics and diuretics.

Sixthly, By the retention of the thicker parts of the fluids, on account of the debility of the excretory organs.

70. This viscosity is originally formed in the first organs of digestion, from whence it is propagated to the blood, and the fluids thence derived: and when any of these viscid particles pass the lacteals, and get into the blood, their immediate effects are principally manifest in the lungs, where they cause a dyspnoea, not being able to pass readily through the small pulmonary vessels.

71. The effects of such a viscosity, in the first organs of digestion, are,

An utter prostration of appetite. Of this I have seen frequent instances in those, who have destroyed these organs by drinking drams: these utterly lose their appetite, and, when they vomit, discharge a viscid substance, sometimes much resembling frogspawn.

A sense of repletion, nausea, and inclination to vomit, because these viscidities, adhering to the coats of the stomach, excite an uneasy sensation, in the manner a feather does, when thrust down the throat.

A crudity of the aliments taken in, because they cannot be digested.

Hence, likewise, the bile is rendered inert and unactive, being, as it were, inspissated by these viscidities, and carried along with them through the intestinal tube, and lost.

Hence, also, arise pituitous, and pellucid concretions of the stomach, and intestinal tube, which are productive of excessive pains, adhering to the coats of these organs.

Costiveness, and tumours of the belly, are, moreover, excited, for want of a proper stimulus from the bile, and a retention of the gross viscid faeces. This is frequent in children.

Hence, also, a due preparation, perfection, and secretion of the chyle is prevented.

72. In the blood, sizziness, paleness, and immeability, are generated. In the vessels, obstructions and concretions. Hence also pale urine without any smell, viscid

viscid saliva, and leucophlegmatic tumours. The due secretions are, also, prevented, and the more subtile parts of the fluids become deficient, whence a coalition of the smallest canals is induced.

73. It is obvious, that from these causes all the digestions, circulations, secretions, excretions, and the vital, natural, and animal motions must be disturbed, whence a suffocation of the circulation, and death must ensue.

74. From what has been said above, (69, 70, 71, 72, 73), the diagnostic, prognostic, and nature of disorders, proceeding from glutinous viscosity, may be collected, and the proper methods of cure indicated.

75. With respect to the cure, it is to be performed, first, by a constant use of aliments and drink well-fermented, and duly seasoned with attenuating salts, and aromatics. For, fermentation destroys the viscosity of all the farinaceous vegetables. Rice or oats, boiled, make a kind of jelly, or glue, which is destroyed by fermentation. Beer well-fermented does not cause phlegm; but ptisans will: therefore, in cold, languid diseases, strong beer is proper; and in hot, inflammatory disorders, ptisans. *Boerhaave* says, that strong beer is a most noble remedy in these cold disorders, arising from viscosity; and affirms, that he has known many cures performed by the use of *Brunswick* mum, and well-fermented biscuit, only.

I. Aromatics incide and destroy the viscosity of the fizy humours. The principal of these are cinnamon, mace, nutmegs, orange-peel, thyme, origanum, cloves, ginger, pepper, the lesser galangals, citron-peel, anise, coriander, mother of thyme, and cardamoms.

II. By broths made of animals, abounding with exalted volatile salts; such are those mentioned under 66, N. 1, 2, as remedies for disorders proceeding from a redundance of acid: and these broths must be seasoned with such acrid vegetables, as those directed
under

under the same article, for the cure of diseases arising from an acid. (See 66, N. 1, 2.)

III. By strengthening the vessels and viscera. (See 28, and 47.)

IV. By exercise and motion; for, without a due degree of these nothing can relieve, at least cure. See FIBRA.

V. By diluting, resolvent, stimulating, bilious, and saponaceous medicines.

Materials proper for diluting and resolving are specified under 54, N. 4.

Stimulating medicines are such as, by their bulk, density, figure, and mobility, increase the contractile force of the fibres, when applied to them. The principal of these are,

First, Saline acids; and these are either natural, as the juices of citrons, oranges, grapes, and other acid summer-fruits, and the native salts procured from the expressed juices of vegetables: or produced by fermentation, as Rhenish and Moselle-wine, vinegar of wine, and of beer, spirit of vinegar, tartar, cream of tartar, sour milk, and sour whey; or produced by fire, as spirit of sea-salt, of sal-gem, of nitre; of vitriol, and of sulphur by the bell.

Secondly, Alcaline salts, which are either fixed or volatile, fixed alkaline salts are all those prepared from the ashes of plants, as salt of wormwood, of *carduus benedictus*, of tartar, and pot-ash, six grains; volatile salts are all those distilled from putrified animal substances, as salt, and spirit of hartshorn, of human blood, of bones, and of sal ammoniac.

Thirdly, Compound salts, as sea-salt, sal-gem, native and artificial sal ammoniac, nitre, borax, *tartarus tartarizatus*, and *tartarus regeneratus*.

Fourthly, Acrid aromatic oils; as the distilled oils of wormwood, of citron-peel, of orange-peel, of *cassia lignea*, of chamomile, of cinnamon, of cloves, of hyssop, of the woods of *guaiacum*, juniper, and sassafras, of mace, of marjoram, of mint, of nutmegs, of *cretan origanum*, of penny-royal, of rose-wood,

wood, of rosemary, of rice, of savine, of sage, of lavender; of the seeds of anise, dill, carraways, and of fennel; of amber, of tansy, and of turpentine.

The oils, by expression, of bitter almonds, of bayberries, of mace, and of nutmegs.

The native oils; as balsam of *Gilead*, of *Tolu*, of the palm, of *Peru*, of *Capivi*, of *Mecca*, and of turpentine.

The empyreumatic acrid oils, distilled by the retort; as of blood, of bones, of horns, of eggs, of urine, of woods, and of bricks.

Fifthly, Inflammable spirits produced by fermentation, from farinaceous vegetables, and the juices of summer-fruits.

Sixthly, Acrid, aromatic plants, such as abound with salt (N. 2.) and oil (N. 4.; as leaves of southern-wood, wormwood, maudlin, dill, anise, birth-wort, arum, betony, calamint, mother-wort, germander, ground-pine, the great celandine, scurvy-grass, dittany, noble liver-wort, hedge-mustard, hemp-agrimony, fennel, ground-ivy, ivy, hyssop, bays, lovage, marjoram, horehound, feverfew, baum, mint, cresses, cat-mint, tobacco, origanum, dittander, arsmart, leeks, penny-royal, rosemary, rice, savine, savory, sage, water-germander, mother of thyme, soldanella, thyme, tansy, treacle-mustard, Paul's betony, and nettles.

Aromatic stimulants are, the flowers of the herbs whose leaves we have now mentioned, but especially

The flowers of maudlin, the orange-trees, marigolds, clove-gilli-flowers, lesser centaury, camomil, citron, saffron, eupatorium, lilly of the valley, hops, melilot, Syrian marum, sage, scabious, camels-hay, lavender, Arabian stoechas, tansy, and of the lime-tree.

Stimulant aromatic roots are,

The roots of acorus, garlic, angelica, healthful wolf-bane, birth-wort, wild radish, carline thistle, wild gilli-flower, onions, the greater celandine,

contrayerva, garden and oriental costmary, turmeric, sow-bread, cyprus, leopards-bane, fraxinella, bulbous fumitory, galangals, gentian, elecampane, master-wort, orris, lovage, spignel, ginseng, rest harrow, butter-bur, parsley, sow-fennel, peony, leeks, sneeze-wort, pellitory of Spain, radish, madder, butchers-broom, satyrion, fig-wort, hart-wort, squills, valerian, ramsons, swallow-wort, zedoary, and ginger.

Stimulant aromatic feeds are,

The seeds of dill, anise, smallage, columbines, carraways, fely, coriander, cumin, carrat, rocket, hedge-mustard, fenugreek, lovage, navew gentle, cresses, fennel-flower, parsnip, parsley, leeks, radish, worm-wood, hart-wort, mustard, treacle-mustard, anacardium, cardamoms, burdoc, the grains of kermes, and the seeds of cubebs, juniper, bays, nutmegs, and peach-kernels.

The barks of guaiacum, saffra, juniper, oranges, citrons, lemons, and cinnamon.

Aromatic juices; as assafoetida, gum ammoniac, anise, bdellium, benjamin, gum elemi, galbanum, gum lac, labdanum, mastich, sagapenum, juniper, racamahac, ambergrease, liquid amber, aloes, myrrh, storax, and frankincense.

Seventhly, Insects; as millepedes, ants, may-worms, and cantharides. And also, the parts of some animals; as castor, civet, musk, urine, and the dung of birds which drink but little.

Compound stimulating medicines are decoctions, extracts, conserves, preserves, tinctures, spirits, waters, volatile, oleous, and spirituous salts, pills, and powders.

A decoction against a glutinous state of the humours.

Take of the leaves of round birth-wort, germander, and rue, each one handful; of the flowers of marigold, and agrimony, each half an ounce; of the roots of angelica and master-wort, each
fix

six drams; of the seeds of selery and garden-radish, each four drams; of the bark of iassafras one ounce; and of winters bark two drams: infuse in a sufficient quantity of almost boiling water for two hours, then boil in a close vessel for two hours: make 46 ounces of this decoction, of which let the patient take one ounce warm every hour.

An extract against a glutinous state of the fluids.

Take of the recent leaves of wormwood, hemp-agrimony, white horehound, and tansey, each a sufficient quantity: cut them small, triturate them, express the juice in a press, depurate it over a gentle fire till the fæces are separated; then evaporate to the consistence of thick honey, and add one fortieth part of *Tachenius's* salt of wormwood. The dose is half a dram twice a day, on an empty stomach, in French wine.

The like extracts may be made of decoctions inspissated, and expressed.

A conserve.

Take of the recent tops of rue and tansey, each an ounce; of the recent flowers of Syrian marum, rosemary, and lavender, each four drams; of the recent roots of elecampane and swallow-wort, each one ounce; of the seeds of radish and cresses, each four drams: bruise all together, add four ounces of white sugar; and of this preparation let the patient take one dram four times a day, on an empty stomach, in French white wine, Spanish-wine, malmsey, or Canary.

Of the diseases of the Fibres.

A preserve.

Take of preserved ginger, preserved elecampane, and winter-bark, each one ounce; and of the syrup of mint a sufficient quantity; make into a preserve, of which let the patient take half a dram six times a-day.

A tincture.

Take of the roots of gentian, and the wholesome wolfs-bane, each one ounce, of the leaves of the lesser centaury one ounce; of saffron one dram; of bay and juniper-berries, of the seeds of rocket and mustard, each half an ounce. Boil with spirit of wine in a long glass-phial for twelve hours, to three pints of the liquor; of which let the patient take two drams thrice a-day, on an empty stomach, in one ounce of hydromel.

A spirit.

Take of the flowers of lavender, tansy, orange-tree, and rosemary, each one ounce; of the roots of angelica, elecampane, master-wort, and lovage, each one ounce and an half; of the leaves of calamint, scurvy-grass, and feverfew, each one handful; of the seeds of carraway, selery, rocket, and cresses, each one ounce; of the barks of the juniper, saffaras, and cinnamon-trees, each one ounce and an half. Distil with a sufficient quantity of spirit of wine, to the consumption of half the liquor, so that three pounds of the liquor may be left, cohobating twice from the alembic. Of this spirit let the patient take two drams thrice a-day in wine or hydromel.

A water.

A water.

If, instead of the spirit of wine in the former preparation, we use water, we have an aromatic water; the dose of which is an ounce and an half thrice a day.

A volatile oleous salt.

Take of the preceding spirit two pounds, of potash three ounces, and of sal ammoniac one ounce and an half: distil from a retort to one pound of the liquor, in which dissolve of the distilled oil of citron-peels six drops; of the distilled oil of lavender twenty drops; and of the distilled oil of marjoram six drops. The dose is forty drops, three or four times a day, in one ounce of hydromel or wine.

Pills.

Take of gum ammoniac and opoponax, each one dram, of the bulb of recent arum two drams, of Venice-soap one dram, and of the distilled oil of tanfy ten drops: make into pills, each of which consists of three grains, and one is to be taken every three hours.

A Powder.

Take of the distilled oils of mint, marjoram, and tanfy, each six drops; and of the driest white sugar one ounce: make into an elceo-saccharum, with which mix of white ginger and winters-bark, each four drams. Of this preparation let the patient take half a dram, three times a-day, in wine.

A medicated wine.

Let this be prepared in the same manner with the foregoing spirit, only using wine instead of spirit of wine. The dose is two ounces, three or four times a day.

A medicated ale.

Let the same quantities of the ingredients, for the before-mentioned spirit, be infused in the fourth part of a tun of ale, as yet fermenting, and let this be used for ordinary drink.

Bilious medicines are the galls of quadrupeds, and fishes, especially of the *lupus marinus*, and eel.

Take, for example, of the gall of a bull, and of the *lupus marinus*, each four drams; let them exhale over a gentle fire, till they acquire the consistence of honey; then mix them with a sufficient quantity of the powdered root of arum; and make the whole into pills, of three grains in weight each. Take one every morning, noon, and night, an hour before meals.

To this class belong the *lapis hystricis*, or *pedra del porco*, an infusion of which in the water of carduus benedictus, or Rhenish-wine, is exhibited in the quantity of two or three ounces. And the preparation, recommended by *Helmont*, of the gall and liver of an eel, roasted by a gentle fire, and given in the quantity of a dram, with three ounces of Rhenish-wine.

For saponaceous medicines see (54, N. 4.) among the resolvents.

Sixthly, Frictions, hot baths, and vesicatories, also contribute to the cure of these disorders.

A bath

A bath proper to be used in disorders arising from a glutinous state of the fluids.

Take of the tops of rue, favin, wormwood, tansy, and camomil, each three handfuls; boil in twelve pints of water, and with the decoction mix of Venice-soap four ounces, and of the salt obtained from the twigs of the vine one ounce.

Vesicatories.

Take of recent and succulent horse-radish half an ounce. Apply it to the skin for half an hour, or till the intense heat, tumour, and redness of the part evince a very considerable Inflammation excited:

Or,

Take of mustard-seeds triturated with vinegar four drams, which are to be applied for four hours.

Or,

Take of cantharides without their wings, and reduced to a fine powder; let them be carefully mixed with four drams of the crumbs of bread moistened with a little vinegar: apply for twelve hours, or till the epidermis is manifestly raised into a blister.

The internal parts of the body may be indisposed, or obstructed by concretions, which are either glutinous, thick, caseous, mucous, mucelagenous, friable, ceraceous, pultacious, sordid, calculous, tartareous, serous, inflammatory, polypous, melicercitous, steatomatous, atheromatous, and scirrhus: but we are carefully to guard against confounding a morbid glutinosity with that which is beneficial, natural, lubricating, and anointing, and which is absolutely necessary to the eyes, eye-lids, nose, mouth,

jaws, gullet, stomach, intestines, pelvis, ureters, bladder, urethra, mucilaginous sheaths of the tendons, articulations of the limbs, larynx, aspera arteria, and bronchia; for these are too often confounded by the ignorant.

Diseases from a spontaneous alkali.

76. Some plants very much abound with materials, which neither turn acid, nor coalesce, upon spontaneous corruption, but resolve into a fetid, pinguious alkali: of this sort are almost all the highly acrid aromatics. But these are seldom taken in such large quantities, as of themselves to cause any disease: but, should this happen, it is of the acrid, oily, alkaline sort.

Amongst calefcent vegetables, which are eatable, poisonous, or which serve for pickles, or sauces, *Boerhaave* enumerates the following;

Wormwood.

Jack by the hedge, or sauce all alone.

Garlic.

Mad-wort.

Wild radish.

Cuckow-pint.

Stinking orache.

Asparagus.

Winter-creffes.

Cabbage.

White bryony.

Black bryony.

Wild parsley.

Treacle-wormseed.

Guinea-pepper.

Mother-wort.

Meadow-creffes.

Garden-spurge.

Lesser centaury.

Germander.

Greater celandine.

Lesser

Lesser celandine.
Scurvy-grass.
Onions.
Lead-wort.
Fox-glove.
Rocket.
Hedge-mustard.
Spurge.
Hemp-agrimony.
Hedge-hyssop.
Sciatica-creffes.
Spurge-laurel.
Distander.
Navew gentle.
Water-creffes.
Garden-creffes.
Oleander, or rose-bay.
Water-pepper, or arsmart.
Leeks.
Radish.
Rue.
Savin.
Savory.
Wall-pepper, or stone-crofs.
Mustard.
Squills.
Treacle-mustard.
Spotted ramsons.

77. The liquids formed in the human body, from the parts of animals, are various; first, according to the different aliment, which the animals feed on; secondly, according to the different parts of the animal which are eaten.

78. Animals, which live on vegetables and water, have an acid, or easily acescent chyle; and, consequently, milk of the same nature; which accordingly has the same effect in the human body as vegetable-aliment, (see from 61, to 76) and produces a tenaceous matter in

in the stomach, like curd; and this is a peculiar sort of visciditv.

Of this sort are the ass, cow, goat, mare, sheep, &c. which yield an acescent milk.

Animals, which live on vegetables, grass, ripe summer-fruits, or corn, yield flesh and humours which are not so subject to an alcalescent putrefaction: whence food made of such animals may, with more safety, be taken by a man of a hot constitution. Such are

The lamb.

The tame duck, if fed with corn.

The tame goose.

The boar.

The ram.

The ox.

The goat.

The kid.

The capon.

The stag.

The pidgeon.

The quail.

The rabbit.

Tame hens.

The hare.

The tame partridge.

The tame pheasant.

The hog.

The starling.

The thrush.

The turtle.

The wether.

The calf.

To this class may be added snails.

79. Those animals which feed on others are furnished with juices easily alcalescent.

Almost all sea and river-fish, whether soft, crustaceous, or bony; scarcely excepting any.

The lark.

The wild duck.

The

The solan goose.

The swan.

The woodcock.

The snipe.

The blackbird.

The plover.

The sparrow.

The wild pheasant.

The lapwing.

But several birds of the ambiguous kind feed both upon animalcules, or vegetables.

80. If the aliments are reduced by the vital powers of an human body (58), so as to form such liquids as are found in a healthy and robust Person, after an abstinence of twenty-four hours from meat and drink; and then, if they are left at rest and in warmth, or are strongly agitated, they have in all these cases a spontaneous tendency to putrefaction.

81. But aliments from other animals have directly this spontaneous tendency to putrefaction, before the above-mentioned change (80), induced by the human body.

82. This putrefaction (80, 81) imports such a condition of the humours, that the aqueous particles exhale; and the saline matter, being attenuated, divested of its acid, or changed and separated from its earth and oil, becomes acrid, volatile, and alkaline: the oily particles likewise being partly rendered more thin, divested of their earth, and mixed with this acrid salt, become acrid, volatile and fetid; and partly being tenaciously united with the earth, divested of its water, salt, and the other particles of its oil, form black, dense fæces which are pitchy, tenacious, and excreted with difficulty.

83. Insects, fish, amphibious creatures, flying, creeping, walking, swimming animals, and mankind, have a spontaneous tendency, in their own nature, to this putrefaction.

84. The causes of this putrefaction (82) are,

1st, Food

1st, Food from other animals, except milk from graminivorous animals (78), but principally from insects, fish, rapacious birds, and from alcalescent vegetables.

2d, An abundance of good blood, or of blood in a state near to putrefaction.

3d, A great strength of the vessels, viscera, and bile (from 50, to 54).

4th, A stagnation, or too great an agitation, from animal motion being too languid, or too much accelerated.

5th, A too great heat made familiar to the body by long use.

85. In the *primæ viæ* it causes thirst, loss of appetite; nidorous eructations, bitterish putrid sordes upon the mouth, tongue, palate, and fauces; a nausea; a vomiting of bilious putrid matter; a putrid crudity; a bilious diarrhæa; inflammatory iliac pains; a troublesome sensation of heat.

86. In the blood it produces a putrid dissolution; an alkaline, oleous, volatile acrimony; an ineptitude for nutrition; an aptitude to consume the solids; a destruction of the minutest vessels: hence all the actions of the solids and fluids are disturbed, depraved, and destroyed: and hence a change is induced in the circulation, secretion, and excretion: hence burning fevers; and hence the urine, and all the secreted liquors, are in a putrid state; inflammations; suppurations; gangrenes; sphacelations, and death.

87. From what has been said (76, to 86) at length not only the diagnostics, and prognostics, but also the cure of this disease, may be easily understood.

88. The cure is performed,

1st, By easily acéscant meats and drinks, or such as are already acid; as the farinaceous vegetables, boiled in water, and digested to a beginning corruption; milk and its herbaceous productions, ripe summer-fruits, their crude acid, or their fermented, vinous, or acetose juices. (See 35, N. 1).

2d, By

2d, By acid medicines procured from vegetables, crude or fermented, and by salts, and sulphur converted into acids by the force of fire. (See 75, N. 5.)

3d, By salts which absorb alcalis; such as sal gemma, sea-salt, and nitre.

4th, By aqueous diluents.

5th, By gently obtunding medicines; such as emulsions, and decoctions of the farinaceous vegetables.

A lenient acescent decoction.

Take of entire oats two ounces; of pure water three pounds: after boiling to two pounds, and straining the remainder, mix with it of the fresh juice of citrons one ounce; of distilled cinnamon-water two drams; of the syrup of mulberries one ounce. Let this be used by the patient both for meat and drink.

Or.

Take of decorticated oats two ounces; of pure water three pounds: after boiling it to two pounds, and depurating the remainder, let it stand in a moderate heat for twelve hours, or till it becomes gently acescent: then add of syrup of violets one ounce and an half; of Rhenish-wine half a pound; of the distilled water of citron-peel one ounce and a half.

For the same purposes.

A like emulsion.

Take of decorticated oats three ounces; make with water into an emulsion; with a pound and a half of which mix of pure nitre half a dram; of syrup of violets one ounce; of vinegar of squills two drams.

6th, By saponaceous, abstergent, acid, suboleous medicines, oxymel, and acetose sapas, or robs.

Take

Take of oxymel of squills three ounces; of the vinegar of squills two drams; of myrrh reduced to a tincture in vinegar one dram; of distilled succory-water six ounces: mix all together, and let the patient take half an ounce every hour.

Or,

Take of vinegar, boiled to the consistence of honey, half an ounce; of pure honey one ounce; of syrup of succory one ounce and an half; of distilled fumitory-water six ounces: mix all together for the same use as the former.

Or,

Take of the robs of currants and elder each two ounces; of simple oxymel one ounce; of the spirits of common salt twenty drops; of barley-water four pounds: mix all together; and let it be taken at pleasure for constant drink.

7th, By rest, sleep, vapour-baths, and fomentations.

89. *From what has been said, the reasons will be obvious in what cases, and for what reasons acid eructations succeeding those of the nidorous kind are good.*

These are not universally and in all cases good; for in infants and weak patients, abounding with acid humours, such eructations are often highly offensive, because they induce a violent cardialgia. But when rancid and nidorous eructations proceed from a putrid matter adhering to the stomach and adjacent parts, subsequent acid eructations are good, because they denote that the putrefaction is subdued and counter-balanced by the force of the acid in the first organs of digestion. Agreeably to this doctrine, *Hippocrates* in sect. 6. aphorism I. tells us, "That acid eructations with which the patient was not before afflicted, supervening long-protracted lenteries prove a good and salutary sign." The reason of this is sufficiently obvious.

obvious, since in lenteries, all the aliments are discharged by stool, before they have time to assume an acid quality. So that acid eructations indicate, that the stomach and intestines are so much corroborated and fortified, as to retain the food till it becomes acescent.

Why, and to what patients, when recovering, a taste like that of sal ammoniac is troublesome.

This is almost universally experienced by persons recovering from acute disorders; to whom every species of aliment appears to have an highly saline taste. Thus, for instance, very weak broth, prepared with flesh, to such patients tastes like the strongest brine. The same circumstance is observed to happen to patients recovering from a plague. This taste is produced by the acescent or acid aliments correcting the predominant putrid alkali, and changing it into a certain species of mild compound salt. This effect is, also, in a good measure produced by this circumstance, that in acute disorders the tongue is always rough and fordid, whereas, when that crusty matter falls off, it becomes highly clean, and acquires an exquisite degree of sensation.

Why sweat of an acid scent is a salutary, and a hopeful sign in acute disorders.

In diseases of the languid, slow, and chronical kind, sweat of an acid scent is a bad sign, because it denotes, that the patients strength is greatly exhausted; whereas in acute disorders it indicates, that the peculiar state and condition of the humours, by which they tended to an alkaline, putrid quality, is subdued, and in some measure corrected.

What acrimony is of the acid, alkaline, bilious, or oleous kinds.

An acid acrimony is produced by acescent aliments, not thoroughly subdued and corrected by the force and energy of the vessels and viscera; for all animal fluids, properly so called, have a spontaneous tendency to a putrid, but never to an acid quality, for which reason, an acid acrimony is only produced by the aliments the patient uses.

As

As for an alkaline acrimony,

This is produced by the tendency of the aliments to putrefaction; and by a stagnation of the humours; for, so long as the fluids circulate freely, it seems hardly possible, that they should become absolutely putrid, and assume an alkaline nature; since the exquisitely tender vessels of the brain and cerebellum could not bear the action and influence of so highly acrid humours without being destroyed. Every acrimony of the alkaline kind is principally discovered in the excrements, since, in the stools of patients indisposed by this cause, a true putrefaction is often observed. In diseases of the highly putrid kind the urine is next disposed to putrefaction.

As for an acrimony of the bilious kind,

Among all the fluids of the human body, none, excepting those of the excrementitious kind, has a greater propensity to putrefaction, than the bile, which, for this very reason, is soonest corrupted in acute disorders; hence an acrimony of the bilious kind is of all others the most intense and noxious; for as, in acute disorders, in consequence of an augmented circulation of the fluids, a preternaturally large quantity of bile is secreted, without being obtunded by a mild, balsamic chyle, as in a state of health, so this redundant bile, becoming acrid and thin, is mixed with the mass of blood, and disturbs the whole animal oeconomy.

As for an oleous acrimony,

The corruption of all oils, even of the mildest kind, is of all others the worst. The sweetest oil, expressed from almonds, is in a few summer-days so corrupted, as to lose its mild quality, and become highly acrid, so that when swallowed it burns the fauces. Whilst the marrow of bones, a substance naturally so mild, is corrupting, it makes the thickest and strongest bones moulder into a kind of carious dust, by its malignant acrimony, and intolerable stench. The degree of tenacity, with which corrupted oil adheres,
 augments

augments the malignant symptoms in the parts which it touches.

What diseases may be called putrid, in the proper sense of that word.

Putrid disorders are properly all those which, in consequence of an increased motion and heat of the fluids, make all the humours so degenerate, as to tend greatly to putrefaction. Of this kind are principally all acute continual fevers, and especially those, which, from their producing this effect, the ancients called putrid, in which, frequently in the beginning, the sordid state of the tongue, the acrimony, redness, and ungrateful scent of the urine, and the fetid smell of the stools and sweat exhibit palpable marks of putrefaction.

Why putrid diseases are principally incident to persons of the most robust and plethoric constitutions.

In such persons the redundance of laudable blood, the intense heat, and the strength of the vessels, and viscera, make all the aliments speedily degenerate into an animal nature, that is, assume a spontaneous tendency to putrefaction. Hence it has often been observed, that epidemical putrid fevers, and the plague, have seized the strongest and most robust persons, whilst those who have been weak, old, or exhausted with chronical diseases, have escaped.

Whether in persons, whilst alive, any humours really alkaline have been found?

It is not to be doubted but extravasated humours, when collected either in the natural cavities of the body, or such as are formed by diseases, may become putrid in living persons, especially if the air has free access to such humours. But a genuine putrefaction in the blood and humours, secreted from it whilst moving duly through their proper vessels, has rarely, or never been observed. Nay, it is almost dubious, whether in the most putrid disorders a genuine alkali has been observed in the urine, which carries along with it the most acrid salts of the blood. Boerhaave, how-

ever, saw one case, which induced him, in a great measure, to think, that such a thing may happen, though very rarely. A full-grown young woman laboured under a putrid fever of the kind, called a *synochus*. "I, (says he) being called on the tenth day of the disorder, found her pulse small, quick, and unequal; a tremulous motion in all her muscles, and her respiration high and difficult. Notwithstanding these symptoms, she retained the use of her reason, but her urine had an intolerably fetid smell. Into this urine, which had been discharged about three hours before, I poured some spirit of nitre, upon which a violent effervescence succeeded, and eight hours after the patient died." This urine was, therefore, truly alkaline, but it was for three hours exposed to the open air, and had, perhaps, remained long in the bladder before it was evacuated. Dr. Morton also, in *apparatus curat. morbor. universalis*, affirms, that he knew the blood of a woman, labouring under a kind of malignant erysipetulous fever, of so highly fetid a smell, that the surgeon and by-standers fell into a deliquium as it flowed from the vein.

The urine long retained in the bladder, or absorbed by a porous stone, may, perhaps, on some occasions, become putrid.

An old man, a corn-merchant in *Leiden*, laboured under a difficulty of discharging his urine. The surgeon, employed on the like occasions to afford him relief, by the introduction of a catheter, was from home, and the patient would not commit the care of himself to any other, but remained in that situation till next day, waiting for the return of his usual surgeon, who, by introducing the catheter, procured a discharge of urine so putrid, that it tinged the silver catheter with the various colours of the rain-bow; and the surgeon himself, who had incautiously received the steam of the highly putrid urine into his mouth, was, for some days after, afflicted with a gentle peripneumony. It is also certain, from well-vouched observations, that
urine

urine absorbed by a fungous stone lodged in the bladder and kidneys, by its stay there, and the heat of the place, becomes highly putrid.

On other occasions death happens before the corruption of the urine, because the pulpy extremities of the vessels, directly subservient to the preservation of life, are wasted and consumed by an acrimonious fluid, which has not, as yet, assumed an alkaline quality.

As these vessels are so tender and small, as not only to elude the cognizance of our senses, but also almost to escape the force of our imagination, so they must be destroyed, as soon as they are acted upon by acrimonious fluids. Thus those who die of a suppression of urine have all the functions of their brain disturbed before their death, and either die in a profound and gentle sleep, or in convulsions. The retained acrid matter, generally discharged with the urine in health, seems to destroy those tender vessels. Hence also appears what an acid, alkaline, bilious, or oily acrimony is.

90. Hence also we know the inconveniences of too languid, or too violent a motion of the circulating liquids; and how the effects vary, as they affect different parts of the body, and act upon different humours; and also the prejudice the human body receives from their stagnation and extravasation. And hence plainly appears the reason of the origin of the viscosity of the humours, when we eat, in too great quantities, thick decoctions of animal substances, prepared by long boiling; or, when we eat too plentifully, or too long, the integuments of animals, or their viscid and tenacious extremities: for, hence arises a phlegm distinct in its nature from that described at the end of (75) above.

91. Having considered the most simple disorders incident to the solids and fluids apart, we shall next treat of the most simple diseases incident to the solids and fluids in conjunction.

Diseases which arise solely from too violent a circulation.

92. **A**LL the fluids, contained in any vessels arising from the aorta, are secreted from the blood alone, which a little before was so effectually mixed in the right and left ventricles of the heart, that it apparently resembled one homogenous fluid.

93. This blood when circulating in the vessels contains large globules, of a determinate bulk, a changeable figure, and a redish colour; yellow serous globules, six times smaller than those of the red kind; a pellucid fluid, capable of being concreted by the fire; and a pellucid, light, and fine water, consisting of still smaller globules, which however cannot be discerned on account of their transparency. The globules of the first three species form what we call the red blood, whilst those of the last form what we call the serum, both of which may be discerned by microscopes.

94. The red part of the blood when concreted, and separated from the serum by rest alone, and in consequence of the laxity of the parts, is soon so resolved into serum as to be almost totally converted into it.

95. Serum, long kept in an air moderately warm and moist, by rest alone and the laxity of its parts, is resolved into a more thin, pellucid, and light fluid, which gradually becomes putrid, and is so volatile, as to be almost totally evaporated; and these circumstances are increased in proportion to the time.

96. All blood (92), newly taken from the veins, is, by gentle heat, but little surpassing the natural warmth, and with a small loss of the exhaling part, coagulated into a solid, scissile, and tenacious mass, not to be dissolved by water, salt, oil, or spirits. And the like effect is produced by an heat procured by fluids, which is a particular method of concretion, though in its effects similar to the former.

97. The redness of the blood (93, 94), together with the serum and lymph, which are thus capable of concretion (95, 96), are produced by the action of the vessels,

vessels, and the efficacy of the circulation, as the change induced on the nature of the chyle, milk, and blood, whether circulating or not, inform us, as is sufficiently discovered by microscopes.

98. An increased motion of the blood through the vessels, is produced by more frequent and strong contractions of the heart.

99. The contractions of the heart are rendered more frequent and strong, first, by the brain and cerebellum promoting a too copious expression of the nervous fluid, as is observable in persons under the influence of any passion, or racked with the agonies of pain; secondly, by an irritation of the heart, in consequence of an accelerated motion of the venous blood, produced either by friction or the action of the muscles, or by some acrid, aromatic, saline, acid, alkaline, purulent, ichorous, or putrified substance lodged in the mass of blood; and sometimes by a species of contagion, plague, or poison, and when this happens, the disorder cannot, from the discoveries hitherto made, be distinctly explained.

100. An increased motion of the blood through the vessels produces a greater force of the blood propelled into the receiving vessels; a greater resistance in the vessels to the blood; a strong compression of the blood; a violent mutual attrition of the vessels and blood; a strong mutual attrition of the parts of the blood; a greater heat in all the parts of the body; an exsiccation of the blood, in consequence of the dissipation of its most aqueous parts; an inflammatory viscosity of the blood, by which it is easily disposed to concretion; a resolution of the blood into salts, or volatile and acrid oils; an increased largeness of the vessels at their origins; an impulse of the thick fluids into the minute vessels, which produces in them obstructions, distractions, inflammations, suppurations, gangrenes, a sphacelus, a scirrhus, and the infinite misfortunes which may succeed them.

101. An increased circulation of the blood may therefore be known from an acquaintance with its causes (99), and effects (100); but especially from the quickness and hardness of the pulse, the velocity and difficulty of respiration, and the intense heat.

102. The remedies therefore best calculated and most efficacious, for allaying an excessive circulation, are such as diminish the frequency and force of the contraction of the heart.

103. Some of these remedies have an influence on the mind, and others on the body.

104. The former of these remedies are such as allay violent passions by reasoning, for instance, exciting the contrary passion, or diverting the person under its unhappy influence.

105. The other medicines, proper for allaying an excessive circulation of the blood, respect the body, and act by inducing a rest of the muscles and relaxation of the veins (54), by correcting acrimony, by diluting, by obtunding (66, 67, 68), and by removing the causes of the pain. (See 202, 228, 229.)

Diseases arising from a defect in the circulation, and from a Plethora.

106. **T**HE disorders arising from a defect of the circulation of the humours, are, in nature, pretty much the same with those spontaneously produced by their stagnation. In this case the air is of great importance; since, when admitted, it accelerates spontaneous corruption, which would otherwise be brought on more slowly; so that the knowledge and cure of the former are the same with those of the latter; and from all these, the nature, cause, effects, signs, and remedies of a plethora may be duly understood, provided the following circumstances are adverted to.

A plethora is a larger quantity of laudable blood, than is capable of undergoing those changes, which
must

must necessarily happen for the purposes of life without inducing diseases.

This species of plethora, then, is generated by every cause which produces a large quantity of laudable chyle and blood, and at the same time hinders their attenuation, consumption, and perspiration.

Among the other causes of a plethora, we may justly reckon the great contractile force of the chylopoietic organs, heart, and arteries; a lax texture of the veins and other small vessels; mild aliments, easily convertible into chyle; much sleep; an easy mind; a want of due muscular motion, and habitual evacuations of blood, whether natural or artificial.

All the effects of a plethora depend upon that rarefaction of the blood, which is to be ascribed to its increased velocity, and the heat arising from that circumstance, or to other causes, only to be known from observation. Hence arises a dilatation of the arteries, both sanguiferous and lymphatic, a change of the secretion, a compression of the sanguiferous and lymphatic veins, a suffocation of the circulation, an inflammation, a rupture of the vessels, a suppuration, a gangrene, and death.

A plethora then, when present, is easily known; and its future effects readily foreseen.

A plethora is cured by venesection, exercise, watching; a sharp and acrid diet, after due evacuations; and by a gradual omission of these evacuations, which otherwise dispose to corpulence. (See 76, 75, N. 1. and 75, N. 5. class 1.)

Obstructions.

107. **A**N obstruction is such an obturation of the vessels, as prevents the circulation of the fluids, whether of the sound and vital, or of the morbid and peccant kind, through them; arising from an excess of the bulk of the fluid to be transmitted above the capacity of the vessel which ought to transmit it.

108. Such an obstruction proceeds either from the narrowness of the vessels, or the excessive bulk of the fluids to be transmitted through them, or from a concurrence of both these circumstances.

109. The narrowness of the vessels is produced, either by external compression, the contraction of the vessels themselves, or an increased thickness in their membranes.

110. The bulk of the molecules of the blood is increased by the viscosity of the fluids, or by means of an *error loci*.

111. An obstruction may, also, proceed from a narrowness of the vessels, in conjunction with a preternatural bulk of the molecules of the fluids (109, 110.)

The vessels may be externally compressed,

First, By an adjacent tumour, either of the plethoric, inflamed, purulent, schirrhous, cancerous, œdematous, encysted, steatomatous, atheromatous, melicerous, hydatidic, aneurismatic, varicose, tophous, pituitous, calculous, or callous kind.

Secondly, By fractures, luxations, distortions, or distractions of the harder parts of the body, compressing the flexible and pliant vessels.

Thirdly, By every cause which preternaturally stretches and lengthens the vessels, whether by a tumour, or the pressure of a part, when out of its natural situation, or by an external stretching force.

Fourthly, By external compressing causes, such as too tight cloaths, bandages, the weight of an incumbent body pressing upon one particular part, and ligatures; this effect may, also, be produced by motion, attrition, and embracing other bodies; for, when any part of the human body is moved against an hard obstacle, the flexible vessels are necessarily compressed: those who are not accustomed to travelling, have their feet inflamed by long journeys; and those who tug severely at the oar have their hands inflamed; and, if that exercise is long protracted, vesicles of an almost gangrenous nature are raised,

113. An increased contraction, especially of the spiral fibres, and, also, of the longitudinal, lessens the cavities of the vessels; and this contraction arises, first, from every cause which increases the elastic force of the fibres, vessels and viscera. (See 31, 36, 40, 50, 51.) secondly, from the tumour, and preternatural distention of those minute vessels, by a contexture of which the sides of the larger vessels are formed; and, thirdly, by a diminution of that cause which dilates the vessels, whether, for instance, inanition, or a languid state of the vessels: hence vessels, when divided, soon check and restrain the discharge of their contained fluids; and the reason of this is sufficiently obvious: for, whilst the blood is, by the force of the heart, propelled into the arteries, the greater resistance there is about their extremities, the more they are dilated. But, when an artery is divided, there is scarcely any resistance, and the blood flows freely from the wound. In consequence of this, the artery is not distended, but by its own contractility is gradually more contracted, till at last it totally hinders the effusion of the blood, which would otherwise be discharged. Hence it is, that so violent hæmorrhages happen from half-divided vessels, which cannot be successfully stopt, till the vessels are totally divided.

114. The thickness of the membranes of the vessels is increased, first, by every tumour (112, N. 1.) happening in those vessels, by the union and contexture of which the membranes are formed: and, secondly, callosities either of a cartilaginous, membranous or bony (51) nature, formed there.

115. The bulk of the fluids is so increased, as to become incapable of circulating, either, first, by a change of the spherical figure of their parts, into any other, and thus entering the cavities of the vessels, under a larger surface: or, secondly, by the union of several molecules before separated.

116. The figure of these molecules is principally changed by a cessation of the equable and uniform pressure

pressure upon them, so that they are left to their own elasticity; and this happens, when the motion of the blood is languid, the vessels relaxed, or the quantity of the fluids diminished.

117. The molecules of the fluids are united by rest, cold, frost, exsiccation, heat, a violent circulation of the blood, a strong compression of the vessels, as also, by acid coagulating things; by austere, spirituous, and absorbent substances; and by the viscosity and oleous quality of the fluids.

118. By an *error loci* the fluids become incapable of circulating, if corpuscles enter the dilated bases of conical vessels, and are, at the same time, incapable of passing through the narrower parts of these vessels. A plethora, an increased motion of the fluids, their rarefaction, or a relaxation of the vessels, principally induce this dilatation; especially, if these are immediately succeeded by their contraries.

119. Hence the causes and nature of every kind of obstruction may be understood.

120. An obstruction happening in a live body hinders the circulation of the fluids, which ought to pass through the vessels; stops the other particles of the blood conveyed to the obstructed part, and receives their action; expresses the more subtil, and unites the grosser parts of the fluids; extends, dilates, attenuates, and resolves the vessels; condenses the stagnant fluids; destroys the functions arising from an uninterrupted circulation, empties and dries the vessels, which ought to have the circulating fluids conveyed into them; lessens the capacities of the vessels, which ought to transmit the fluids; augments both the quantity and velocity of the fluids in the unobstructed vessels; and, consequently, produces all the evils which can arise thence.

121. For this reason, the effects (120) of an obstruction are various, according to the diversity of the obstructed vessel, and the obstructing matter.

122. In

122. In the sanguiferous arterial vessels, an inflammation of the first kind happens; in the dilated, lymphatic, arterial vessels, an inflammation of the second kind; in the larger lymphatic vessels, an œdema; in the smaller, pains without any apparent tumour; but in the pinguiferous, osseous, medullary, and biliary vessels, other disorders arise from an obstruction.

123. The physician, who knows the seat, the nature, the matter, the causes, and the effects of obstructions already mentioned (107, to 123), will easily discover the signs of a future and present obstruction, together with their effects.

124. When the different kinds of obstructions are distinctly known, it is no difficult matter to find a cure adapted to each.

125. For that species of obstruction, which arises from external compression (112), indicates the removal of the compressing cause, if possible.

126. That species of obstruction, which arises from an increased contraction of the fibres, may be known by those signs which discover a contraction of the viscera, vessels, and fibres (34, 36, 40, 50, 53.) That kind of obstruction in which the contraction arises from a tumour of the minute vessels, which constitute the sides and cavities of the larger vessels (113, N. 2.), may be discovered by the manifest signs of its cause; as, also, that species of obstruction which arises from inanition, or a diminution of the cause which dilated the vessels (113, N. 3).

127. This species of obstruction (113, 126) is removed, first, by such medicines as correct the too great contraction of the fibres, vessels, and viscera, (35, 36, 38, 54, 55); secondly, and more especially, if their virtues have immediate access to the part affected, which advantage is principally obtained by fomentations, fumigations, baths and ointments; thirdly, by such remedies as empty the too full vessels composing the membranés. This intention is answered by evacuants in general, but especially by laxative, diluting,

luting, resolvent, attenuating, deterfive, and evacuant medicines applied to the vessels themselves; and, fourthly, by such medicines as resolve callosities when formed.

128. But the species of obstruction, which arises from this cause is rarely or never to be cured: emollient and relaxing medicines are, however, most efficacious. Hence appears the inevitable necessity of death, and the great difficulty of procuring a long life, by means of medicines.

129. That unfitness of the fluids for passing through the vessels, which depends upon their losing their spherical figure, may be known from an investigation of its causes (116), which are, for the most part, subjected to the senses.

130. It is cured by such remedies as restore the spherical figure of the globules of the blood. Of this kind are all those things which increase the motion of the fluids through the vessels and viscera, such as all stimulating and corroborating medicines, as also brisk motion.

131. As the concretion and inspissation of the fluids arises from so various and different causes (117), so it requires different methods of treatment, and different medicines, according to the different conditions of the patient. And this diversity of causes, when investigated, will discover the most proper medicines, and the best method of using them.

132. The concretion of the humours in general is removed, first, by the reciprocal motion of the vessels; secondly, by dilution; thirdly, by an attenuating fluid conveyed to the mass of blood, mixed with it, and circulating along with it; and, fourthly, by removing the coagulating cause.

133. The reciprocal motion of the vessels is procured, first, by such remedies as diminish the distending causes, such as venesection; secondly, by such medicines as corroborate the vessels (28, 29, 45, 46,

47, 49); thirdly, by friction, and muscular motion; and, fourthly, by stimulating medicines.

134. Water, especially when warm, is a powerful diluent, when drank, injected, received by exhalations, or applied in any other manner; provided it is propelled from the parts to which it is applied, to those where the matter to be resolved is lodged. This intention is answered by deriving, attracting, and propellent remedies.

135. The fluids are attenuated, first, by water; secondly, by sea-salt, *sal gemmæ*, *sal ammoniac*, nitre, borax, fixed and volatile salts; thirdly, by native soaps, consisting of an alkali, and an oil; by compound soaps, whether fuliginous, volatile, or fixed; as also by bile.

Native soaps, consisting of an oil, and an alkali, are recent and mature juices, expressed from all herbs, abounding with an alkaline acrimony (76), or such as are of an highly aromatic quality (76, N. 6.) Artificial soaps, consisting of an alkali and oil, are black soap, and Venice-soap, one or two drams of which may be used; and *Starkey's* or *Helmont's* soap, four grains, or one scruple, of which may be used; fuliginous volatile soaps, oleous and alkaline spirits prepared of *alcalescent aromatics* (76), fifteen drops of which may be exhibited; oleous alkaline spirits prepared of foot, fifteen drops of which may be given; the oleous alkaline spirits prepared from all the humours or solid parts of animals, eighteen drops of which may be exhibited. To this class also belongs foot itself.

And, fourthly, the attenuation of the humours is promoted by preparations of mercury, all these are conveyed to the parts obstructed by derivation, attraction, and propulsion.

Proper mercurials are *mercurius dulcis*, ten grains of which may be used for a dose.

Corrosive sublimate, of which one eighth part of a grain may be exhibited, diluted in some proper liquor.

Red

Red precipitate, two grains for a dose.

White precipitate, four grains.

Turbith mineral, two grains; and

Æthiops mineral, sixteen grains.

Attracting medicines are such as relax the place to which the matter is to be conveyed, and straiten that from which it is to be drawn. These are specified under (35, 28, N. 4.)

Deriving medicines are those which invite the fluids into any given part; and such are the remedies which produce an evacuation in the part affected, and artificial frictions of the adjacent parts.

Propellent medicines are those of the stimulating kind, which are specified under (75, N. 5.)

136. The cause, which coagulates the fluids, is removed by the influence of strongly-attracting medicines: thus acids and oils are attracted by alcalis, &c. as is obvious from chymical experiments.

137. But when the fluids, propelled into improper places, become incapable of circulating, and by that means generate obstructions, many and violent disorders are produced; for which reason the source and cause from which they proceed, ought to be carefully attended to.

138. We may know, that the fluids are propelled into improper places, first, if we find, that the causes (118) of such a disorder, which are generally sufficiently obvious, have preceded; secondly, if contrary causes have succeeded these; and, thirdly, if the effects are evidently perceived.

139. From what has been before said (120, 121, 122, 123) we may easily foresee what the consequences of such a disorder must be.

140. The cure is obtained, first, by repelling the impacted matter, with a retrograde motion, into larger vessels; secondly, by resolving it; thirdly, by relaxing the vessels; and, fourthly, by suppuration.

141. The impacted matter is repelled with a retrograde motion, first, by evacuating the fluid which acts upon

upon the impacted matter, by a liberal and sudden venesection, by which means the obstructing matter is forced back by the effort of the contracted vessel; and, secondly, by friction, performed from the extremities to the bases of the vessels.

142. The impacted matter is resolved by the remedies before specified (133, 134, 135, 136.)

143. The vessels are relaxed by the remedies proposed (35, 36, and 54.)

144. Suppuration will be treated of under the history of inflammation.

Of Wounds in general.

145. **A** WOUND is a recent and bloody solution of the union of a soft part, by a hard and sharp body in motion.

146. Therefore the immediate cause of a wound is the hardness, sharpness, and motion of the wounding instrument.

147. The subject is any soft part; and consequently, the texture of the sanguiferous, serous, lymphatic, adipose, nervous, membranous, and tendinous vessels, and the cisterns formed of them.

148. In which subject (147) the cause (146) produces a separation of the coherent parts, and an effusion of the contained liquid.

149. Hence those actions are injured, which depend upon the integrity of the parts, and a determined flux of liquids through the vessels.

150. Those wounds, therefore, are mortal, which are inflicted in those parts whose cohesion is absolutely necessary to life.

151. Some of these (150) induce inevitable death.

152. Others, if left to themselves, are mortal; but, by the help of art, may be so treated, as to remove the danger of death. (See 171)

153. Yet, through neglect or error, wounds, in themselves not mortal, may be rendered so. (See 172)

154. The

154. The effects of wounds are various, according to the variety of actions exercised, whilst the wounded part was entire; and hence various appellations of wounds arise, which are readily distinguished by the physician, who is acquainted with those actions during health.

155. Nor is there a less variety of names, forms, and effects in wounds, arising from the diversity of the wounding cause (146), with respect to its figure and method of acting, whether by puncture, cutting, incision, or agitation; as also with respect to the force with which it is applied, its removal from the wound, its remaining in it, and its poisonous infection.

156. All these (155) again vary, with respect to the difference of the part receiving the wound (147), as to its hardness, softness, connexion, situation, effect, contained liquid, and alteration.

157. As it is necessary to be acquainted with the origin of this multiplicity, so a subtle distinction of names is of no great use.

158. If in a healthy and robust body a wound is made in a visible place, not irrigated by any large artery, and not too tendinous, these phænomena arise, provided the orifice of the wound is defended from the cold, from air, and exsiccation.

1st, The parts, between which the wounding cause was forced, recede by degrees more and more from each other, although the cause is removed; unless the puncture is very small.

2d, At first blood flows from it with impetuosity, which, by degrees, stops spontaneously.

3d, Then a sanguineous crust is formed in the cavity of the wound.

4th, And a diluted, redish, thin liquor flows from it.

5th, Then the lips of the wound begin to be red and hot, to be painful and swelled, to be turned backwards, whilst the bottom, becoming tumid, is elevated.

6th, And

6th, And at the same time a slight fever, with heat and thirst, is excited.

7th, Hence about the third or fourth day, sooner or later, a tenacious, white, fat, equal liquor, which is called pus, is formed in the wound.

8th, At this time the redness, heat, pain, tumour, retorsion of the lips, and fever cease, or are much diminished.

9th, And the cavity of the wound, from the bottom to the top, from the circumference to the center, is filled with growing flesh; whilst the margin becomes white, blueish, soft, and equal.

10th, Lastly, the wound is dried, and cicatrized.

159. If an artery, not too large, nor too near the heart, is cut quite through transversely, the divided parts retiring, and hiding themselves in the neighbouring solid parts, by means of this contraction, stop the efflux of blood; and the other phenomena proceed, as before described (158).

160. If the same (159) is wounded transversely, and not cut quite through, the wound enlarges by a retraction of the divided fibres; hence a perpetual hæmorrhage, and, when that ceases, an aneurism, from the weakness of the cicatrix yielding to the force of the circulating fluid.

161. If a large artery is wounded and cut quite through, a perpetual hæmorrhage will arise, till fainting or death is induced: the inferior parts grow tabid, and are consumed by a putrid, but slow gangrene; or else, drying, are entirely contracted.

162. Those nerves, which are large and tense, when cut quite through, recede and hide themselves, draw and extend their small branches, situated a little above the wound, excite pain and obstruction in the neighbouring nerves; but, in those parts below the wound, cause a stupor, immobility, emaciation, or a gangrene. (See 180).

163. Nerves, which are tense, or tendinous, if pricked, or cut half through, excite pains, sometimes

at first obtuse, and sometimes acute; first in the wounded place, afterwards in all the annexed and adjacent nerves: hence heats, tumours, a redness extending pretty far round the wound, fevers, deliriums, spasms, inflammation, an aperture of the inflamed part, accompanied with the evacuation of an acrid, thin and often a very copious serum: after these, insensibility, rigidity, exsiccation, immobility, or gangrene and death: and indeed, all these symptoms are the more violent, the more strongly the nerve is stretched above the firm parts, or affixed to them, as also the more tough and tenacious the coverings of the nerve are (see 180, 181, 182, 183, 184).

164. The same symptoms (162, 163) with very little alteration, happen, when tendons are differently wounded, and are extremely violent.

165. And the membranes of the tendons and nerves, which are frequently extended to the adjacent parts, are affected with the same diseases (162, 163).

166. A knowledge of the laws of circulation, and a consideration of the adjacent parts, will teach us in what manner the lymphatic, adipose, venous vessels, and the vesiculæ or small cavities, suffer in wounds.

167. If a wound lies exposed to view, its presence and nature are discoverable.

1st, By the sense, after wiping away the impediments, which hinder the sight of it, and stopping the flux of blood.

2d, By an anatomical knowledge of the adjacent parts.

168. The presence and nature of a wound, which is not exposed to view, are discovered.

1st, By an anatomical knowledge of the part, the situation of the part when wounded, and the direction and force of the stroke.

2d, By an impediment to the action of a particular part, subsequent to the wound.

3d, By the humours discharged from the wound; either within or out of the body.

4th, By

4th, By the symptoms which are consequent to the wound, as pain, hiccup, spasms, tumour, &c.

169. From a knowledge of what has been said (167, 168) the event of wounds may be predetermined and predicted as

1st, The death or life of the person wounded.

2d, The possible, impossible, entire, or partial cure.

3d, The easy, difficult, long, or short cure.

4th, The effects of the wound remaining, after the cure is performed, as consumption, insensibility, immobility, deformity, &c.

170. Wounds prove inevitably mortal by five kinds of effects; so that infallibly mortal wounds are,

1st, Those which intercept the influx of the nervous fluid into the heart from the cerebellum: or, when wounds of the cerebellum or cerebrum are so deep as greatly to injure the medulla oblongata.

2d, Or when the texture of the vessels within the cranium is so dissolved as to admit of an extravasation of their contents, which take away life by pressure, or putrefaction; and which cannot be come at by means of the trepan, by reason of the condition of the place; as it happens in wounds of the inferior part of the orbit of the eye, the ossa temporum, the os æthmoides, and the basis of the cranium, &c.

3d, Or deep wounds of the superior part of the spinal marrow.

4th, Or wounds which divide the cardiac nerves.

2d, Such as cause an effusion of blood from the wounded cavities of the heart: therefore, deep wounds, penetrating the cavities of the heart, are mortal.

3d, Those wounds which derive the blood from the heart, cerebrum and cerebellum, either into some internal cavity, or out of the body; and which cannot be stopped by reason of the situation of the place; as large wounds of the lungs, liver, spleen, kidneys, pancreas, mesentery, stomach, intestines, uterus in

gestation, bladder about its larger arteries, the aorta, carotid, vertebral, and the like arteries and veins.

4th, Those wounds which entirely hinder respiration, as a division of the larynx, with a retraction of the divided parts; large wounds of the bronchia; broad wounds which perforate both cavities of the thorax, and admit the external air; wounds which penetrate the diaphragm on both sides of the diaphragm, or which affect its nervous part.

5th, Those which prevent the motion of the chyle to the heart, as a division of the œsophagus; large wounds of the stomach, or small intestines; an entire division of the superior intestine; a wound of the thoracic duct, or receptacle of the chyle.

171. Wounds in their own nature mortal, but curable by art (152) are,

1st, Wounds of any of the contents of the cranium, which are capable of being relieved by the trepan.

2d, Wounds of the large arteries or veins, in such places as will permit the hand of the Surgeon to come at them.

3d, Wounds of the viscera, to which the hand and medicines can have access, with a salutary effect.

4th, Such wounds as are fatal through an emission of their liquid into those cavities, from whence it may be taken without danger of life, as it happens in some wounds of the thorax, abdomen, ureters, bladder and intestines.

172. That wounds of themselves not mortal (153) will prove mortal, may be predicted from the following causes.

1st, From a neglect of evacuating the extravasated pus, which by that means becomes a purulent gore; or the extravasated blood, which for that reason becomes putrid.

2d, From errors with respect to the six non-naturals.

3d, From a neglect or error of the Surgeon.

4th, From the natural or morbid habit of the patient, which may be either discovered from the particular

cular case of that patient, or is sometimes of so peculiar a nature as not to manifest itself but by this event. But the Physician is always to have a due regard to the habit of the patient in making his report to judges concerning wounds.

173. On this doctrine depends the renunciation of wounds, and the determination of the time, in which they may prove fatal.

174. From the history also of wounds, as delivered (from 145, to this place), the prediction of other events of wounds, which are necessary to be foreseen, will not be difficult. (169.)

175. The causes of those phænomena (described from 158, 159, to 181 as above) will be plain to whoever understands the vital and animal functions. See the diseases of the solids and fluids in general.

176. The exterior coats of the arteries pricked, cut, bruised, broken or eroded, whilst the internal coat remains uninjured, are dilated by the impetus of the blood, and form a bag, which often increases to the bigness of an egg, has callous sides formed; is furnished with a pulsation; is of a redish colour; when compressed, disappears; when relaxed, returns; enlarges the artery, in which it is formed, and, by compressing the adjacent vessels, lessens their diameters. This is called a true aneurism (160); the causes, signs, and effects of which are easily seen.

177. If in like manner an artery, wounded by the same causes, remains infirm after the cure, the same things happen as in (176).

178. When from the same causes (176) all the coats of the artery are destroyed together, and the artery pours out its liquid into the adjacent distended parts, from whence it can find no passage, there is made a collection of extravasated blood, which is perpetually increased; without any determined measure. This tumour is soft, has scarcely any pulsation, is livid, does not disappear by compression, soon putrifies, and hence causes a gangrene of the neighbouring parts.

This is a spurious aneurism, (160) the cause, signs and effects of which are known by this description.

179. The other effects of a large wounded artery (161) are easily understood from physiology; as also the phenomena of a nerve wounded (162).

180. But that the cause may appear plain, of those surprizing effects, which arise from a puncture, or a partial dissection of the nerves, according to what has been said (163, 164, 165,) the following observations drawn from anatomy and the theory of physic are to be considered.

181. Every visible nerve is a congeries of the smallest nerves, connected together by extremely fine membranes, arteries and veins, with interwoven lymphatics, and then covered all together with a common membrane.

Thro' all these minute vessels composing a nerve, a fluid proper to each is conveyed from the heart, cerebrum, cerebellum, and spinal marrow. And in all these there is a remarkable contractile force.

182. Therefore when the parts of a nerve are intirely cut thro' and divided, they recede from the place of the wound toward the fixed parts to which they are annexed, and hide themselves in the surrounding solids, by which they are compressed; and by this means their own orifices, and those of their vessels are closed so that no other damage happens besides what is described (162)

183. If a nerve is cut or pricked in such a manner, that some of the small fibres are broken, which compose the larger nerve when united, the dissolved parts receding (182) will draw the smallest fibres which connected the small nerves to each other and to the vessels (187) from whence there will arise a perpetual and slow laceration; and, therefore, a very great acute and continual pain. But the parts still cohering will alone sustain the force, which the entire nerve sustained before. They will, therefore, be more distracted and lacerated; and, consequently, afflicted with an acute pain :

pain: By their distraction they will also be so compressed as to prevent the circulation of their fluid: When the one part divided, and the other cohering, are thus affected, the intermediate vessels are compressed. Hence the blood, lymph and spirits are stopped, acted upon and accumulated; for which reason there is an inflammation produced by the blood, lymph and spirits about the parts.

Hence the adjacent nerves and tendons, together with their coats, as also the muscles and vessels are stretched, constricted and convulsed; by which means the membranes of the brain, cerebellum and spinal marrow are contracted and vellicated, and the action of the brain disturbed.

And hence by a natural necessity those appearances (described 163, 164, 165.) follow.

184. Hence also we understand what sort of puncture, laceration, or wound of a nerve is so fatal, and why: and, farther, why the same things happen in regard to membranes, tendons; and many kinds of vessels.

185. In order to the healing of a wound it is necessary;

1st, To take away whatever being left there hinders its union, whether it proceeds from the liquids and solids corrupted, from the wounding instrument, or any other cause.

2d, To supply what is lost by a regeneration of what is taken away.

3d, To unite the separated parts, and keep them united.

4th, To form a cicatrix as like as possible to the natural skin.

186. Impacted fragments of metals, stones, wood, glass, bullets, concretions of blood, mortified flesh, or membranes, broken-bones, are first to be taken away, if they are discovered.

187. We are to judge, whether any body is to be left or taken away, by considering the nature of the wound, of the

wounded part, of the impacted matter, the strength of the patient, and the symptoms that will follow.

188. From the same considerations (187) the instrument for extraction, and manner of extracting (186) may be determined.

189. After the wound is depurated in this manner (186, 187, 188,) if any thing is taken away from the body, that is, if there is any loss of substance, that it should be restored by a generation of matter like that which is lost. This comes to pass,

1st, If the arterial, lymphatic and nervous small vessels, &c. are in such a condition as to receive and transmit their own liquids in a good condition.

2d, If this good natural liquid is carried into these vessels in a fit quantity, and with a proper impetus.

190. For by these means (189) there will be an impletion, humectation, extension, elongation, implication, with the neighbouring parts, an application to other adjacent parts by means of the reticular plexuses, and a conglutination, by means of a laudable fluid of the wounded, retrotracted, obstructed, compressed, and almost exsiccated canals (158, N. 10.)

191. And whilst these (190) from every point, of the bottom particularly, and of the sides, are performing, and with an equal force, the cavity of the wound, from every part to the center, is filled with solid and liquid matter, like that which is lost.

192. To this end (189), therefore, is required, first, a proper diet, that the chyle and serum of the blood, and nutritious matter may be mild, glutinous, not easily putrifying, but of easy digestion and assimilation. Farinaceous decoctions, either crude or fermented, emulsions, milk, broths, ripe fruits boiled, and light pot-herbs, are particularly proper, if given in small quantities at a time, and often repeated: above all things taking care to guard against repletion, hunger, and thirst.

193. A consideration of the temperament of the patient, the season of the year, his usual way of living, and the
nature

nature of the concomitant disease, will direct us in the choice and preparation of these things (192), that they may be useful to the patient.

194. Whatever is acrid, and increases the force of the blood too much, is to be avoided; for which reason saline, aromatic, and acid substances, acrid pot-herbs, and wine are prejudicial to wounded persons.

195. Also whatever easily putrifies: therefore, broths too thick, and alcalescent herbs are hurtful, as radishes, cresses, cabbage, and the like.

196. Also whatever aliment is difficultly converted into chyle and blood. Of this sort are all those things which are hardened by salt, smoke, or the air alone; or which contain a great quantity of fat, as bacon, fat fish, and also geese, ducks, and such kind of aquatic fowl, as feed on fish, &c. And, lastly, all viscid substances, as coarse pulses, crude farinacious substances, and eggs.

197. The same intention (189) is also promoted by medicines which remove the impediments to consolidation (190, 191), and which are generally exhibited in the form of decoctions, which must be varied according to the diversity of the impediment to be removed, since none of them is beneficial in all cases.

198. Hence they are, according to the circumstances of the patient, prepared of attenuating, inspissating, mitigating, or exciting substances, such things as by a specific quality are contrary to the disorder, aperients, laxatives, astringents; and, consequently, often of substances of opposite qualities.

An attenuating decoction.

Take of the leaves of spurge-laurel, Paul's betony, and rue, each an handful and a half; of the roots of avens one ounce; and of the flowers of the lesser centaury two pugils: boil in water, with three pints of which mix of the salt of carduus benedictus one dram; of the syrup of the five aperient

Of Wounds in general.

rient roots three ounces : let the patient drink four ounces warm, four times a-day.

An inspissating decoction.

Take of orpine, the greater and lesser comfrey, mallows, and pellitory of the wall each one handful : boil in water, with three pints of which mix two ounces of the syrup of marsh-mallows ; to be used as the former.

A mitigating decoction.

Take of the bruised seeds of white poppies three ounces ; of the flowers of mullein two ounces ; of the leaves of bugle two handfuls ; of the roots of vipers-grass two ounces ; and of liquorice root one ounce : boil in water, three pints of which are to be used in the same manner as in the former.

An exciting decoction.

Take of the roots of master-wort and swallow-wort each one ounce ; of the leaves of rue and scordium each one handful ; of bruised dock-seeds ten drams ; of bruised cardamom-seeds four drams ; and the flowers of lavender and the lesser centaury each two ounces : boil in water, and let three pints be exhibited as before specified.

Specific alteratives.

First, for viscidities. (See the attenuating decoction above.)

Secondly, for acidities.

Take of mustard-seeds half an ounce ; of the roots of wild-radish, and of the leaves of hedge-mustard and water-creffes each two ounces : boil gently in a sufficient quantity of water, to two pints of the strained liquor, of which let the patient take two ounces four times a-day.

Or, thirdly, for an alcali, thus:

Take of the roots of the sharp-pointed dock two ounces; of the leaves of wood-forrel two handfuls; of the roots of wood-forrel one ounce; of borrag leaves twelve drams: boil gently in a sufficient quantity of water to two pints of the strained liquor; to be used in the same manner with the former.

Or, fourthly, for an oleous disposition.

Take of tamarinds two ounces; of the crystals of tartar six drams; and of the roots of grafs five ounces: boil in a sufficient quantity of water, with two pints of which mix two ounces of elder rob for the same use with the former.

Or fifthly, aperient remedies. (See the attenuating decoction above.)

Or sixthly, laxative (see 54, N. 4. the moistening decoction.)

Or seventhly, astringent (see 28, N. 4. a decoction.)

199. We are to be directed in our choice of these by a knowledge of the nature of the disorder, and of the respective virtues of the medicines mentioned in (197, and 198.)

200. The state of the air is best, when it is dry, and has a moderate heat; when it is pure, and free from all putrid exhalations, and is often renewed.

201. The belly must be kept lax, by the use of emollients, laxatives, and eccoprotics.

Emollients are,

1st, Fat broths prepared of recent beef.

2d, Mild pot-herbs boiled in broth (35, N. 1.)

3d, Emollient and moistening liquors drank, and injected by way of clyster (35, N. 3. and 54, N. 4.)

4th, The

4th, The recent, and especially the expressed oils of sweet almonds and olives.

Laxatives are almost the same with emollients.

Eccoprotics are,

1st, Ripe, summer, acid and somewhat sweetish, pulpous, and succulent fruits; such as winter-cherry, the berries of elder, and dwarf-elder, figs, any garden-cherries, cloud-berries, stone-brambles, strawberries, jujubes, apricots, peaches, white and yellow plumbs, damask prunes, common prunes, prunellos, red prunes, white, black, and red currants, common black-berries, white and red rasp-berries, seabastens, tamarinds, all the species of grapes, goose-berries, cran-berries.

2d, The recent juices and musts of these.

3d, Of cassia two ounces; of manna two ounces; of tamarinds two ounces; of the pulp of tamarinds two ounces; of the juice of pale roses one ounce; of roasted aloes six grains; of raisins four ounces; of galbarrum half a scruple; of the roots of polypody of the oak one ounce and an half; of rhubarb a scruple and an half; of rhubarb in infusion one dram; of Ferrius's syrup of marsh-mallows three ounces; of the syrup of succory with rhubarb one ounce and an half; of the syrup of fumitory two ounces; of the solutive syrup of roses one ounce and an half; of the simple syrup of violets two ounces; of common honey diluted in water two ounces; of the pilulæ rufi six grains.

202. Sleep must be procured by anodynes, a humid diet, and narcotics.

Anodynes are such-medicines as remove or lessen the causes of pain, and are

1st, Diluents. (See 54, N. 4.)

2d, Laxatives. (See 35, N. 1.)

3d, Moistening substances. (See 35, N. 4.)

4th, Correctors of acrimony. (See 66, and 88.)

5th, Such as resolve distending tumours. (See 54, N. 4.)

Narcotics

Narcotics are such medicines as blunt and impair the quickness of the senses, and are either,

1st, Gentle paretics; such as the bruised seeds of white poppies two ounces; the syrup of white poppy-heads an ounce and an half; the syrup of diacodium an ounce and an half, and the syrup of wild poppy-flowers three ounces: of all which various safe medicines may be prepared thus:

For a mild draught.

Take of the distilled water of wild poppy-flowers three ounces; of the distilled water of bean-flowers one ounce; of the distilled waters of piony and elder-flowers each an ounce and an half; of the water distilled from the flowers of the lime-tree one ounce; of the syrup of wild poppy-flowers an ounce and an half: mix for a draught.

The same somewhat more hypnotic.

To the former mixture, instead of the syrup of wild poppy-flowers, add the same quantity of the syrup of diacodium, or of the syrup of white poppy-heads.

A mild emulsion may be prepared thus,

Take of sweet almonds, pine tops, and the seeds of white poppies each an ounce; and of the distilled water of wild poppy-flowers a sufficient quantity: make into an emulsion; with ten ounces of which mix one ounce of the syrup of wild poppy-flowers.

The same a little more paretic.

To the former emulsion add, instead of the syrup of wild poppy-flowers, the same quantity of the syrup of diacodium, or of the syrup of white poppy-heads, as was prescribed in the preceding emulsion.

Stronger

Stronger narcotics are these following.

For Pills.

Take of the purest opium two grains: make into three pills; of which let the patient take one for a dose, taking a second an hour after, if the first produces no effect; and the third after that, if the two first prove ineffectual.

For a Powder.

Take of the purest opium a little dried two grains; and of red coral and pearl-sugar each half a dram: mix into a powder to be divided into three doses, to be exhibited in the same manner with the former pills.

A preserve.

Take of the preceding powder of opium one dose; and of marmelade of quinces one dram: make into a bolus to be exhibited in the same manner with the preceding preparation.

A draught prepared with drops.

Take of the best opium a little dried one dram; and of rectified spirit of wine one ounce: make into a tincture, the dose of which may be thirty drops in two ounces of distilled baum-water, and half an ounce of the syrup of wild poppy-flowers.

Or,

Take of opium a little dried one dram; and of the spirit of vinegar one ounce: make into a tincture the dose of which may be thirty drops in two ounces of the distilled water of wild poppy-flowers, and half an ounce of the syrup of wild poppy-flowers.

A warm mixture.

Take of the tincture of opium prepared with rectified spirit of wine seventy drops; of the syrup of white poppies six drams; and of the distilled waters of cinnamon, citron, and orange-peel each two ounces: make into a mixture, of which let the patient take one spoonful warm every half hour, till his pain is allayed.

A cold mixture.

Take of the tincture of opium prepared with spirit of vinegar eighty drops; of the syrup of mulberries six drams; and of the distilled waters of borage and wild poppies each three ounces: make into a mixture, to be used cold in the same manner with the former.

An emulsion may be prepared thus,

Take of the bruised seeds of white poppies two ounces; with barley-water reduce to an emulsion, with ten ounces of which mix of the syrup of diacodium an ounce and an half; of the tincture of opium prepared with rectified spirits of wine twenty drops; of distilled cinnamon-water two drams; and of distilled citron-peel water ten drams: of this preparation let the patient take an ounce and an half every half hour, till the pain begins to be alleviated.

An epithem may be prepared thus,

Take of the tincture of opium prepared with spirit of vinegar three drams; of the distilled waters of elder and rose-flowers each three ounces; of the vinegars of elder and roses each half an ounce: mix all together to be applied with cloths to both temples.

It is of great service, in cases of this nature, so to apply demulcents to the part pained, as to remove the cause which deprives the patient of sleep, which is the pain in the part affected. This intention is answered by the following preparations applied tepid, and preserved in the same state of tepidity, till the pain is alleviated.

A cataplasim may be prepared thus,

Take of the recent leaves of garden-poppies one handful; of the recent leaves of black henbane half an handful; and of the recent leaves of marsh-mallows four handfuls: boil in recent milk, adding towards the end, of linseed meal one ounce, and of recently expressed linseed oil two ounces: make into a cataplasim.

A Fomentation may be thus prepared,

Take of the thin juice expressed from the preceding cataplasim three pints; with which mix half a dram of pure opium for a fomentation.

203. The patient's mind is to be kept serene, venery is to be avoided, and rest enjoined.

204. That the canals may be kept in a proper condition, and that the liquids in the wound may be hindered from corrupting; and by that means impede the actions described (189, 190, 191,) the part is to be defended from the air; the wound is to be fomented with mild balsamic vulneraries, filled with lint for the sake of an equable compression, and treated with such medicines as are friendly to the nerves.

The mild vulnerary balsams, for pure wounds are.

1st, The native balsams of capivi, of gilead, liquid amber, and the balsam of mecha, as also the following native balsams, opobalsanum, the *balsam palma*, and those of peru, tolu, and of turpentine.

2d, Simple

2d, Simple artificial balsams, the rectified oil of wax, the thick oil of turpentine, and the oils of linseed, St. John's wort, roses, night-shade, and sweet scented trefoil. To this class also belongs fresh butter.

3d, Artificial compound balsams, thus,

Take, of the flowers of sulphur four drams; and of the oil of linseed, or olives, four ounces: boil over a gentle fire, till the sulphur is totally dissolved.

Or,

Take, of the best gum elemi cut small one part; dissolve over a gentle fire, and add an equal quantity of pure native venice-turpentine: pass the solution through a linnen-cloth, and add two parts of the marrow of beef, boiled and separated from its membranes. This, like the linimentum arcæi, is an universal balsam.

Or,

Take, of the wood of red sanders, one pound; and of common water four pints: boil for two hours, strain and inspissate to the consistence of a thick extract, with which mix two drams of dragon's blood, reduced to a fine powder. Mix a little of this with the preceding balsam till it acquires a grateful red colour; and this is the red balsam.

Or,

Take, of the oil of olives one pound and an half; and of the wood of red sanders half an ounce; boil gently, till the oil is of a deep red colour; then strain boiling hot through a linnen-cloth, and dissolve in it of yellow wax one pound, and
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of the best turpentine a pound and an half : this resembles the balsam of *Lucatellus*, and is rendered still better by the addition of one ounce of peruvian balsam.

All these are to be dropt warm into the wound, which is to be covered with a pledget dipt in the ointment ; and the dressings are to be renewed every twenty four hours.

205. Plaisters are of use to retain these things (204) in wounds, and are hardly of any other service than that produced by their safe adhesive quality.

The red defensive plaister is prepared thus

Take, of the oil of roses and white wax, each six ounces ; of armenian bole and dragons-blood each an ounce and an half ; and of the powder of red roses, half an ounce ; mix all together over a fire, and agitate till cold.

The same end is also answered by the emplastrum defensivum cœruleum, and the red lead plaister.

206. The fluids conveyed to the wound, and extravasated in it, the half-mortified fibres, and the obstructed and tumefied vessels produce in the wound pus, ichor, fordes, and fungous flesh.

207. These things (206) ought to be taken away by the help of digestives, abstersgents, corrosives, exsiccants, and often by compressure.

A digestive may be prepared thus,

Take, of native turpentine one ounce ; one yolk of an egg ; mix intimately, and then incorporate with half an ounce of honey of roses.

An abstergent may be prepared thus,

Take, of aloes, myrrh, and the leaves of scordium, reduced to a fine powder, each two drams ; and of the small shavings of venice-soap one dram ;
triturate

triturate carefully together; and add three ounces of the preceding digestive.

Corrosives.

1st, The mildest corrosives are, burnt alum, the ashes of green wood burnt, mercurius dulcis, white precipitate, and white vitriol.

2d, Stronger corrosives are red precipitate, colcothar of vitriol, and vigo's troches of red lead; and

3d, The strongest corrosives are, butter of antimony, the lapis infernalis, corrosive sublimate, oil of tartar per deliquium, and oil of vitriol. The stronger corrosives are, the more prudently are they to be used. The following may serve as a formula.

Take of aloes and myrrh, each one dram; of the salt of tartar two drams, and of common water, two ounces: mix and boil to a lixivium.

An exsiccant may be prepared thus,

Take of verdigrease five ounces; of crude alum one ounce; of strong vinegar seven ounces; of pure honey fourteen ounces: boil up into an ointment.

The following substances are also exsiccant; alum gently calcined, quicklime water, bloodstone, mastich, dragon's blood, and gum sarcocol.

208. These things (207) are to be used, till a white, mild, viscid, smooth, equal and in odorous pus is formed, after which the lories are to be absterged; the confused, and tumid parts consumed; and those corrupted by the air separated; the cavities filled, and the divided parts conglutinated.

209. Then those things are to be applied, which are said to generate flesh, and which are the milder digestives.

Sarcotic or incarning medicines are the vulnerary balsams (204), thus,

Take, of yellow wax, black pitch and common rosin, each half a pound ; and of linseed-oil, two pounds : mix all duely together ; this is a basilicon or tetrapharmacum.

Or,

Take, of yellow wax six ounces ; of the oil of the flowers of St. John's wort, obtained by infusion, two pounds and an half ; to which, when fused over a gentle fire, add of dried resin of the pine tirturated ; and of the best common colopony, each one ounce and an half. When they are melted take them off the fire, and straining them through a linnen-cloth, add two ounces of the best Venice-turpentine, stirring them with a stick. When they begin to thicken, sprinkle into them of the best mastich and olibanum, each one ounce, and of saffron finely tirturated one dram. *This is the unguentum aureum.*

210. But if, when those things are done (185), which answer the first intention (186, 187, 188.) it appears, that none of the substance of the body is taken away, the lips are to be united in such a manner, that the parts naturally united may again be applied to each other, and retained in that situation.

211. The first of these is done,

1st, By procuring to the part the same situation it had whilst at rest, before it was wounded.

2d, By a gentle and equable compressure of the Parts to each other, that they may be contiguous in every part of their superficies, and remain at rest.

212. The parts are retained in contact, 1st, By adhesive indented plaisters, with protuberances at their extremities, applied to both lips of the wound, and drawn together by threads. These are used in long transverse wounds of the skin and the more lax parts. Adhesive plaisters may be prepared thus,

Take,

Take, of the diapalma-plaister a sufficient quantity,
and a little olive-oil, dissolve together.

Or,

Take of common pitch a sufficient quantity: spread
on a linnen-cloth, and apply.

213. 2dly, The parts are retained in contract by bandages, and the application of compresses, that the divided parts (14 1) being equably applied to each other, may remain in that state, and unite; which is easily obtained by a proper method of compression. This method is proper in longitudinal wounds.

214. 3dly, The parts are retained in contact by sutures made with needles of steel, which in small wounds may be streight; but in large wounds crooked, with a sharp point and a waxed thread in their eye. These needles are to be introduced at a sufficient distance from the wound, and are to pass to its Bottom, in such a manner, that the point may emerge at an equal distance from the opposite lip of the wound; then taking the needle quite through, the thread is to be so drawn as to contain the lips in contact; and after the application of a slight compress, a knot is to be tied on it. This method is to be repeated as often as the length of the wound requires, beginning either at the middle, or one of the ends of the wound. Then the lips are to be anointed with some proper balsam; and applying slight compresses over the knots, the whole is to be covered with a plaister.

215. These sutures are proper (214) in wounds which are recent, and bloody; but however without any violent hæmorrhage; simple, without any contusion, or fracture of the bone; full, that is, without loss of substance; transverse, oblique, or angular wounds.

But they are prejudicial (214) in wounds attended with any considerable hæmorrhage; in such as are old,

sanious, purulent, fordid, contused, with loss of substance; in such as are covered with crusts; such as are dangerous in consequence of a wound of some large vessels; such as are very deep; such as are greatly inflamed; such as are infected with poisons; and such as are inflicted in parts the motion of which is necessary.

216. 4thly, The parts are retained in contact by a needle passed through the lips of the wound, and a thread so wrapt about it as to hinder them from receding from each other, but keep them united. This method is proper in large and gaping wounds of the pendulous parts of the body.

217. The last end (185, N. 4.) is attained, by taking care that the parts answer to each other just in the manner they did in health; and that they are retained so, in such a manner, as not to be too much pressed, nor too lax; by avoiding all burning, styptic and astringent applications; but particularly, by taking care that the pressure is equal in all parts of the wound.

All these things are obtained by doing as is above directed (41, to 72), and then applying mild desiccative medicines; and lastly, by washing the cicatrix with spirituous liquors.

Cicatrifying or epuclotic medicines are these following;

The red desiccative ointment.

The unguentum diapompholygon.

The unguentum calcis.

The unguentum nutritum, and

The white ointment of rhases.

The emplastrum album coctum.

The emplastrum de lapide calaminari, or the grey plaister.

The emplastrum de minio rubrum.

The sparadrapum of Gualtherus.

Colophony boiled in turpentine, and reduced to meal.

Frank-

Frankincense.
Olibanum, and
Mastich.

Hæmorrhage.

218. **I**F a great quantity of blood flows from a wound, through the causes given (159, 160), it is to be stopped.

1st, By the actual cantery.

2d, By corrosives.

3d, By astringents.

4th, By tying up the artery.

5th, By cutting quite through, or entirely dividing the wounded artery.

6th, By bandage and pyramidal compresses.

Corrosives are

White vitriol.

The lapis infernalis, and

Oil of vitriol.

Astringents are,

1st, Those substances which contract the vessels; such as

Alcohol

Spirit of turpentine.

Recent juice of unripe quinces.

Dragons-blood.

Puff-ball, and

Crocus of mars.

2dly, Those substances which coagulate the blood, such as

Alcohol.

Spirit of nitre.

Spirit of sulphur.

Caleined vitriol

Sugar of lead.

The Peruvian bark, flowers of pomgranates, and

The blood-stone.

219. In this case (218) revulsion is of no service, unless the wounded arteries are small (159), and there

is a plethora. The same is true with regard to meats, drink and internal medicines. What has been said of an hæmorrhage may be applied to the flux of ichor; though the greatest help we have in this case is from the thicker balsams.

Pain.

220. **I**F any nervous fibre, arising from the brain, is extended so as to threaten its dissolution, the idea of pain arises.

221. The nearer such a nervous fibre is to rupture, the more intense is the pain; and the nearer it approaches to its natural tension, the pain is the milder.

222. Hence it appears, that the greatest degree of pain is but short; but a less degree may continue long, and be increased, or remit.

223. Therefore the cause of pain is whatever makes such an extension (220.)

224. To this belong,

1st, The force of natural contraction sustained by fewer fibres, whilst some are dissolved (183.)

2d, Whatever by over filling a vessel, formed of a contexture of nervous fibres, distends it; to this belong obstruction, plethora, a redundant cacochymy, and an increase of the circulatory motion in the fluids.

3d, Whatever distracts the nervous fibres, as luxation, tumour, and external force.

4th, Whatever wounds or corrodes.

225. From hence the various causes (224) of pain (220) in a wound (145) are known.

226. And the effects, also, are understood, as inquietude, jactation, watchings, fever, heat, thirst, driness, convulsion, gangrene.

227. The difference of the anodyne is to be estimated and determined, according to the variety of the causes.

228. Therefore the cause of pain is taken away,

1st, By

- 1st, By relaxing the distended fibre.
 - 2d, By resolving whatever is concremented.
 - 3d, By diminishing motion, and the distending matter.
 - 4th, By taking away the unequal and violent traction.
 - 5th, By correcting the acrimony.
 - 6th, By discussing it; and
 - 7th, By evacuating that which dissolves the fibres.
- For the medicines specified (in 228, and 229) see (202.)

229. The sense of pain is taken away, whilst the cause remains (224.)

1st, By rendering the nerves insensible, by means of compression, dissection or exustion.

2d, By obtunding the common sensory by the force of narcotics: and, by these, some of the effects (226) arising from the sense of pain are taken away. (See 202.)

Convulsion.

230. **A** Convulsion is a violent, necessary, and alternately repeated contraction of a muscle.

231. The cause of this is whatever drives the nervous liquid with alternate force into the convulsed muscle.

232. And, therefore, may be inherent in the wound itself; whether it be foreign matter irritating, or the condition of the wounded nerve, (163, 164, 165, 183, 184.) or too great an evacuation of blood preceding.

233. Hence also the effect of a convulsion, which is a perturbation of all the functions, is known.

234. It is cured,

1st, By taking away whatever irritates, (186) by the art of the surgeon, (187, 188.)

2d, By correcting or dissipating the acrimony.

The medicines proper for these purposes are specified (66, and 88.)

3d, By

3d, By taking away the condition of the nerve (232) by the remedies described (228, 229.)

4th, By repletion with a mild, friendly, liquid aliment, often used in a small quantity; such as broths prepared of recent fleshies.

5th, By stopping the hæmorrhage (218, 219.)

235. A small tumour and inflammation in a wound are good; but they prove hurtful if too much increased: Baths, fomentations, anodynes, antispasmodics, applied to the wounded parts, and to the whole of the patient, are of service: these shall be treated of in the history and cure of an inflammation.

Antispasmodics are,

1st, Laxatives.

2d, Diluents.

3d, Resolvents.

4th, Absorbents. Such as

Crabs-eyes.

Pearls.

Ivory.

Harts-horn.

Goats-blood.

Boar's tooth, and

Elk's hoof, &c. (66, N. 5) and

5th, Opiates.

236. Extravasated blood, fallen into any cavity of the body, should immediately be brought away, by a proper situation of the body, by suction with a pipe, if the wound is recent, or after a dilution of the blood, by dilating the aperture of the wound, or by making a fresh incision.

The extravasated blood, when coagulated, is diluted by these or other preparations of a like nature.

Take, of common honey two ounces; of Venice-soap two drams; of sea-salt four drams; and of rain-water twelve ounces: mix all together.

Or,

Or,

Take, of sal ammoniac and nitre each three drams ; of the recent urine of a sound person twelve ounces ; and of common honey two ounces : mix all together.

Or,

Take, of aloes dissolved in water, duly cleansed from its resinous faeces, and again gently inspissated, four drams ; of sal ammoniac two drams ; of borax two drams ; of pure honey two ounces ; of rain-water nine ounces ; and of white French-wine two ounces : mix all together.

The prudent injection of these preparations, when tepid, and a gentle conuassation of them with the stagnant blood, dilutes it, resolves it, preserves it from putrefaction, and prepares it for an evacuation. Hence such preparations are much used, when extravasated blood becomes stagnant or coagulated in the large cavities of the body.

237. If the wound descends amongst the firm parts of the body, way must be made for the fordes by pressure, lotion, ligature, by a fresh aperture, or dilatation of the wound.

238. Dilatation is made by the knife, by lint, sponge, gentian-root, and such like things, put in dry, tied with a thread, and swelling by absorbing the humours, and, by this means, dilating the wound.

Wounds of the Head.

239. **W**OUNDS of the head injure either the external common integuments only, or the periosteum, or the cranium, or the dura mater, or the pia mater, or the vessels, the cortical or medullary substance, or the ventricles of the brain.

240. We

240. We may know, that the integuments only are injured, first, by considering the figure of the wounding instrument.

Secondly, By reflecting on the force with which the wound was inflicted.

Thirdly, The condition, and especially the figure, of the part injured, will afford us some light as to the depth of the wound.

Fourthly, From the mildness of the symptoms; which consist principally in the depravations of the several functions consequent to the wound.

Fifthly, Wounds of the integuments only are distinguished from others by the sight. In wounds, therefore, of the head, the hair is immediately to be shaved off, and the part is to be washed with equal parts of wine and water, a little warm. The wound is then, before the first dressing, to be carefully inspected, that the parts injured may be known, a just prognostic formed, and a right method of cure pursued.

Sixthly, The probe will discover the nature of these wounds.

241. Though these wounds (240) may at first seem slight, yet they frequently become dangerous, on account of the vicinity of the muscles, tendons, tendinous expansions, futures, periosteum, cranium, nerves, blood-vessels, and the brain; as also because the great contractile force of the wounded part causes the sides of the wound to recede from each other, and consequently enlarges it.

242. If a contusion should accompany a slight wound, this circumstance renders it more liable to be attended with bad symptoms.

243. If the aperture is but small, the contusion large, and a great quantity of corrupted humours are contained within, bad symptoms will very probably ensue.

244. In cases of this kind, the fordid humours, collected (242, 243) and retained within, cause considerable tumours, an erysipelas, or oedema, pains,
con-

convulsions, putrefactions of the bones and periosteum, fevers, and death. The air also getting into the cavities of the cellular membrane, and, being there confined by the incautious application of plaisters, raises considerable emphysematous tumours.

245. If the integuments only are injured, without any of the unpromising circumstances (241, 242, 243, 244) above related, the cure is easily performed, though the wound appears to be very large, by proper bandage, and the method (from 183, to 239) directed for the cure of wounds in general. But the cure succeeds best, when proper measures are pursued whilst the wound is recent; when the lips of the wound are properly brought together; when it is dressed but seldom, and then with the utmost expedition; when all moist, relaxing, unctuous applications are carefully avoided; and when it is well defended from the air.

246. When any of the muscles, tendons, tendinous expansions, periosteum, cranium, nerves, blood-vessels, or brain are injured, or when a wound near the sutures is productive of bad effects (241), the treatment must be varied (183, to 239), as the different parts affected (241); and the nature of the injury require, and as is directed under the doctrine of *Wounds in general*.

347. Thus, in case of a contusion (242), the parts contused must be well digested by such applications as are capable of dissipating the stagnating humours, or of suppurating them; but for these purposes, such medicines must be made choice of as are friendly to the nerves and membranes (204, 207, 245), or the contused parts may be cut away.

Boerhaave, in his *materia medica*, informs us, that in these cases such medicines as attenuate, dilute, and preserve from putrefaction, are to be used; and orders the following ointment to be applied upon pledgets.

Take

Take, of turpentine two ounces, and the yolk of an egg: when these are sufficiently mixed, add two ounces of basilicon, and of pure aloes four drams.

Over this let the following plaister be applied.

Take, of gum galbanum, depurated and made up with the yolks of eggs, four ounces; of yellow wax two ounces; of the oil of St. John's-wort three drams: mix all together.

Then add the following fomentation, which is to be applied as warm as possible, with expressed woollen cloths.

Take of the fresh leaves of rue and scordium each two handfuls; of the flowers of the lesser centaury, elder and roses, each three ounces: with thirty ounces of these, boiled in water and expressed, mix five ounces of spirit of wine, and two drams of Venice-soap.

248. If the humours, stagnating in the contused parts, produce considerable tumours, pains, convulsions, putrefaction of the bones and periosteum, and their consequences (244), the most prudent method is, to lay them open by incision, and to depurate the parts by digestive, abstergent, corrosive, or drying applications, as directed (238, 207, 208.)

249. When the pericranium is injured in such a manner, as that the bone lies for some time bare, or putrifies. the bone is deprived of the vessels, which it otherwise receives from the pericranium, and consequently of its own proper vessels: hence, the humours stagnating in the part, the bone putrifies, and a scale
separates

separates from it: whence the bone appears yellow, brown, or black, and at last exfoliates.

250. One principal cause (149) of the putrefaction, and consequent exfoliation of the bone, is an interruption of the continuity of the vessels which nourish it, and consequently of the circulation of the humours through them. Another cause is the coldness of the air, which contracts and dries up the extremities of the small vessels of the bone, though without any of that imaginary malignity which some attribute to the air.

252. In cases where the bone is thus affected, the cure is to be performed,

First, By gently making in the bone a great number of small holes with the perforator, by which means exfoliation is prevented, and the periosteum, or something analogous to it, is regenerated.

Secondly, By keeping the wound clean from pus and sanies, at the same time defending it from every thing unctuous and watery, and applying to it pledges dipt in spirit of wine, impregnated with mastich.

Take, of once rectified spirit of wine an ounce; of distilled rose water half an ounce; and of the powder of mastich three drams; and, when boiled in a tall vessel, preserve it for use in a long phial.

Thirdly, By renewing the dressings very seldom, and with the utmost expedition.

253. By the treatment just mentioned, a new fleshy substance arises out of the punctures, and, spreading all around, covers the part of the bone deprived of its periosteum; and then the rest of the cure (249) is to be performed by the methods specified above, when the periosteum and bone have received no injury. (245. 246, 247, 248.)

254. If the skull itself is injured, it will be either fissured, broken, contused, depressed, or deprived of a portion of its substance, according to the difference

of the instrument, and the force with which the blow was given; and these may happen either in one only, or both its tables.

255. We are enabled to form a judgment whether the bone is injured or not (254.)

First, By considering the force with which the wound is given.

Secondly, By comparing the size of the wound with the figure of the part injured.

Thirdly, By the probe.

Fourthly, Pouring some ink upon the part has also been recommended as one method of discovering a fissure of the bone, when those above specified are not sufficient.

Fifthly, It may further give us some insight into wounds of this kind, to make the patient squeeze some hard substance betwixt his teeth.

Sixthly, If the cranium is broken or contused, or if white spots appear upon it, the sight will direct us to judge of the injury it has received.

Seventhly, The touch will also contribute to the discovery of the particular injury done to the cranium.

Eighthly, The appearance of the integuments will also furnish us with signs whereby to judge of the injury done to the cranium, as will also a separation of the integuments from the bone about the seventh day, great pain, an ichorous and fetid discharge from the wound, and an apparent malignity, not usual when the integuments only are affected.

256. The effects of the injuries above-mentioned (254) done to the pericranium are,

First, A mortification or destruction of that part of the bone, which happens to be separated from the rest. (249, 250, 251.)

Secondly, By the mortification of the separated portion of bone, the adjacent parts of the cranium will be infected.

And, Thirdly, Hence a putrefaction of all the parts thus infected may be produced,

Fourthly,

Fourthly, A caries of the diploë will be produced.

Fifthly, A corruption of the integuments of the cranium, and of those of the brain itself.

Lastly, All those disorders which proceed from affections of the brain, as convulsions, profound sleep, palsy, apoplexy, and death.

257. From what has been said above (254, 255, 256) relative to wounds of the head, their different natures, and the prognostics thence deducible, are easily understood.

258. The curative indications hence arising are,

First, To lay bare the injured bone.

Secondly, To cleanse the wound.

Thirdly, To make small perforations in the bone.

Fourthly, A new periosteum, or a membrane equivalent to it, capable of communicating vessels to, and receiving them mutually from the bone, may be regenerated.

Fifthly, To heal the wound.

259. When the condition of the wound, and the symptoms consequent to it, shew that there is a necessity of laying bare the part affected, the integuments must be cut quite to the bone, by an incision, which must be either direct, angular, perpendicular, or decussated, as the nature of the place affected, and of the particular injury received, shall require; taking care to press cautiously on the bones which are fractured, and yield to the knife.

The next step to be taken is, to separate exactly the parts cut from the cranium, by the *rugine*, an instrument of which there are various forms.

The next thing to be done is, to stuff the wound with dry lint.

260. The blood, pus, sanies, and sordes, must be absorbed by sponges; the fragments, splinters, and scales of bone, if small, not adherent to any membrane, and in sight, must be taken away by the for-

ceps, or they may be cut away by the scissors. This is an artificial mundification.

261. If the fragments, splinters, or scales, are very large, with any considerable adherence, or if they are so concealed as not readily to be come at, they are to be left; and they will either separate spontaneously, or unite with the other parts. This is a natural mundification.

262. If the bone appears to be contused, white, brown, livid or fractured, a great number of small perforations must be made in it, in the manner directed above (252), that, thus these live vessels may sprout out, and the stagnating and putrified humours may be discharged: for by these means (262), a new periosteum is generated (252.)

264. When a new periosteum is generated by the method above directed, the rest of the cure is to be conducted as in simple wounds of the integuments (245, 246, 247, 248, 253.)

265. From what has been said, the reason is evident, why a small fissure is frequently more dangerous than a large contusion of the cranium (256.)

266. It is farther evident that this method (252, 262) of boring small perforations is preferable to burning, scraping, or the application of the trepan used by the ancients on these occasions (249, 254, 256, 262.)

267. When the cranium is pressed inwards, in young subjects, without fracture, or, in older subjects, with fracture, the brain must be compressed. Hence, according to the difference of the part compressed, and according to the various degrees of magnitude, profundity, sharpness, and puncture of the part compressing, dulness of the senses, lethargy, vertigos, ringing in the ears, deliriums, bilious vomitings, pains of the head, convulsions, palsies, involuntary discharges of the urine and fæces, apoplexies, fevers and death, are produced.

268. If

268. If the brain itself is any way injured, the same symptoms and effects (267) will be produced, as by its compresure by the bone, in consequence of its being affected by an inflammation, suppuration, gangrene, fungus, or hæmorrhage.

269. A depression of the cranium (267) is discovered by feeling, or by the sight, especially when the integuments are taken away (259.)

270. A removal of whatever pricks the brain; a restitution of whatever presses it to its natural state; and a retention of it in this state, are sufficient, in the last mentioned cases, for the cure.

271. The cranium in children, when depressed (259), may sometimes be elevated by means of an adhesive plaister, as being soft and yielding, but, in adults, where it is more firm, an elevator is necessary to raise it. In cases, however, where the depressed bone is loose, and yields to the terebra, a perforation must be made in the skull, near the fracture, into which an elevator must be introduced, in order to elevate the depressed bone. Sneezing and retaining the breath have been recommended for the same purpose.

272. It is kept in its situation by guarding against external pressure, by means of a proper dressing.

273. In cases of a fissure, fracture, or contusion of the cranium, the arteries, veins and lymphatic vessels, are sometimes broke, and discharge their respective humours, which, by pressing on the brain, produce the same consequences (267), as a compression of the same part by a depresure of the skull: these humours also, when converted into pus or ichor by putrefaction, infect the extremely tender adjacent parts of the brain, and are productive of similar disorders. These vessels (the veins and arteries) are propagated from the cranium to the dura mater, thence to the pia mater, thence to the brain, its sinuses and ventricles, where, when ruptured, they produce various inconveniencies, both with respect to the degrees of danger, and difficulty of cure.

ceps, or they may be cut away by the scissors. This is an artificial mundification.

261. If the fragments, splinters, or scales, are very large, with any considerable adherence, or if they are so concealed as not readily to be come at, they are to be left; and they will either separate spontaneously, or unite with the other parts. This is a natural mundification.

262. If the bone appears to be contused, white, brown, livid or fractured, a great number of small perforations must be made in it, in the manner directed above (252), that, thus these live vessels may sprout out, and the stagnating and putrified humours may be discharged: for by these means (262), a new periosteum is generated (252.)

264. When a new periosteum is generated by the method above directed, the rest of the cure is to be conducted as in simple wounds of the integuments (245, 246, 247, 248, 253.)

265. From what has been said, the reason is evident, why a small fissure is frequently more dangerous than a large contusion of the cranium (256.)

266. It is farther evident that this method (252, 262) of boring small perforations is preferable to burning, scraping, or the application of the trepan used by the ancients on these occasions (249, 254, 256, 262.)

267. When the cranium is pressed inwards, in young subjects, without fracture, or, in older subjects, with fracture, the brain must be compressed. Hence, according to the difference of the part compressed, and according to the various degrees of magnitude, profundity, sharpness, and puncture of the part compressing, dulness of the senses, lethargy, vertigos, ringing in the ears, deliriums, bilious vomitings, pains of the head, convulsions, palsies, involuntary discharges of the urine and faeces, apoplexies, fevers and death, are produced.

268. If

268. If the brain itself is any way injured, the same symptoms and effects (267) will be produced, as by its compresure by the bone, in consequence of its being affected by an inflammation, suppuration, gangrene, fungus, or hæmorrhage.

269. A depression of the cranium (267) is discovered by feeling, or by the sight, especially when the integuments are taken away (259.)

270. A removal of whatever pricks the brain; a restitution of whatever presses it to its natural state; and a retention of it in this state, are sufficient, in the last mentioned cases, for the cure.

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274. A violent concussion of the head, without fracturing the cranium, will frequently, on account of a rupture of the internal vessels, and consequent compression at the brain, cause the same disorders (273), as the pressure of the depressed or fractured bones of the cranium upon the brain have been said above to produce.

275. The disorders (273, 274) arising from a rupture of the internal vessels, either with or without an injury done to the cranium, are known, by considering the cause, its violence, the part affected, and by bilious vomitings.

When the senses of seeing, hearing, smelling, tasting and touching, are either diminished, depraved, or abolished, the same is indicated.

A vertigo, a dimness of sight, and inability to stand, are also signs of the brains being affected.

In wounds of the head, a profound sleep is always enumerated among the bad signs; but, if a stertor is joined to it, it is still more formidable.

Palseys and convulsions are also signs, that the brain is affected.

A delirium is also a sign, that the brain is affected.

A lethargy is also a sign, that the brain is affected.

An apoplexy is another, that the brain is affected.

Horripulation is also a sign, that the brain is affected.

A redoubled fever is also a sign, that the brain is injured.

Blood discharged from the mouth, nose, and ears, is also a sign, that the brain is affected.

276. The injured part, therefore, within the cranium is distinguished, first, by the external appearances already described (249, 254, 255, 256, 262, 267, 269); secondly, by an investigation of the particular injuries received by the cranium, in the manner already mentioned.

Thirdly,

Thirdly, By a tumour and redness of the skin after shaving the head, and the application of a plaister to it.

Fourthly, By a spontaneous motion of the patient's hand to a particular part of the head.

Fifthly, From a palsy on one side, and convulsions on the other.

277. When this is discovered,

First, the extravasated blood is immediately to be taken away.

Secondly, The parts infected must be depurated.

Thirdly, If any splinters of bone stick in the brain, they must be taken away.

278. The extravasated blood is taken away.

First, By resorption.

Secondly, By dissipation.

Thirdly, By perforating the cranium.

279. The blood is said to be resorbed, when it is repelled, by the vital powers, into the veins evacuated by plentiful bleeding, and proper purging.

The forms of purges, recommended on these occasions in *Boerhaave's mat. med.* are the following :

Take, of the finest syrian-scammony fourteen grains; and of hungary-water two drams: when they are sufficiently triturated in a glass mortar, add six drams of solutive syrup of roses with fena, for a draught.

Or,

Take, of the powder of jalap-root one dram; and of the finest sugar two drams: when they are sufficiently triturated in a glass mortar, add gradually, and at different times three ounces of rain water: make into an emulsion; to which add half an ounce of the syrup of rhubarb for a draught.

280. Bleed and purge (279) immediately upon these occasions, to the greatest degree the patient can bear; and let these evacuations be repeated as often as the

situation of the patient requires, and even after the symptoms (273, 274) are alleviated.

281. The dissipation of the stagnating humours is brought about.

First, By a resorption (279, 280) off the finer parts, in the manner just mentioned.

Secondly, By attenuating the rest, by diluting, aqueous, and resolvent potions, drank very warm.

Boerhaave's prescription, in his *materia medica* is as follows :

Take, of white sanders half an ounce ; of yellow sanders one ounce ; of saffraſas half an ounce ; of the leaves of rue half an handful ; of agrimony one handful ; of the flowers of arabian-stæchas, and lavender each two drams ; of the roots of fennel, parsley, and butchers-broom each an ounce : boil these for a quarter of an hour in a close vessel, with a sufficient quantity of water for four pints of the strained liquor, of which let the patient take two ounces every half hour.

Thirdly, By applying to the part affected, when shaved, plaisters, cataplasms, and fomentations, made of discutient, nervine and cephalic ingredients. (See 247, N. 2, 3.)

Fourthly, By the application of the same discutient, nervine and cephalic ingredients to the ears and nose.

282. If after the evacuations and applications (279, 280, 281) above directed, the symptoms (273, 274) are not entirely removed, or, at least, much diminished, but, on the contrary, persevere or increase, the cranium must immediately be perforated by the trepan, for the convenience of discharging the extravasated humours (273, 277, N. 1.), depurating the affected parts (277, N. 2.), and removing the splinters of bone (277, N. 3.), if any should stick in the brain, or its membranes.

283. The

283. The trepan is to be applied upon the part of the cranium which is injured (276), as being the most proper place, unless any circumstances render its application there improper.

284. The circumstances, which render trepanning immediately upon the injured part of the cranium improper, are,

First, A suture lying immediately under it.

Secondly, Some remarkable muscles lying upon the part.

Thirdly, The cavities of the os frontis lying under it.

Fourthly, The neighbourhood of some considerable artery.

Fifthly, The low situation of the part injured.

Sixthly, The instability of the bone, whether on account of a fracture, contusion, or caries.

Seventhly, A considerable external convexity, and, in consequence of that, an internal concavity of the part.

285. If any of the above related circumstances render the application of the trepan, to the injured part (276) improper, it must be applied as near as possible to that part.

286. If the threatening symptoms (273, 275) of a compressed brain, above related, are very urgent, though the precise place (276), where the compressure is, cannot be exactly determined, yet the trepan must be applied to one or more parts of the cranium (277), if necessary, in order to remove the pressure, and depurate the part affected.

287. When the place for the operation is fixed upon (276, 283, 284, 285, 286), and the hair shaved off, the integuments must be cut through (259) and separated from the cranium, the lips of the wound must be lifted up, the bone dried, and covered with lint, the blood stopped (218), the pain mitigated (227, 228, 229), inflammation prevented (235); and then, if the symptoms are not very urgent, the part must be pro-

perly bound up, and the operation be deferred till the next day.

288. Then securing the patient's head, stopping his ears, rendering the air of the room warm, and wiping clean the cranium, a trepan with a pin is equally, gradually and moderately applied, by resting the operator's head on its superior end, till a sufficient impression is made in the cranium.

289. Then taking out the pin, the trepan is to be slowly applied, continually removing the saw-dust, till the eruption of the blood, the softness of the bone, and the change of sound inform the surgeon that the *diploë* is touched, which, however, as it is often wanting, is in vain expected to be found.

290. Then washing off the blood, stopping its farther discharge, by warm alcohol, and carefully removing the saw-dust, the trepan is cautiously, slowly, and patiently to be turned once or twice round, removing the saw-dust, and constantly looking whether the colour in the circle made by the trepan is changed, and whether the bottom of it is smooth and equable. Then varying the pressure of the trepan according to the difference of colour, the bone is so disengaged as to adhere to the circumjacent cranium but very little, and in an equable manner.

291. When the blueish colour of the bottom of the circle made by the trepan, its equality all round, and the looseness of the portion contained within the crown of the trepan, inform the surgeon that the cranium is almost perforated, the segment is to be removed by an elevator, a screw, or a small spoon.

292. Then the asperities of the sides of the perforation are to be abraded with a lenticular. The saw-dust is to be removed, a passage is to be made for the blood and fordes, by sneezing, retention of the breath, and the prudent, though not frequent use of the *menyngophylax* or depressory. Then the perforation is to be filled with fine soft lint covered with some medicine friendly to the membranes: and the whole covered

vered and defended with a thin plate of lead adapted to the purpose.

293. Then we are to take the same measures with those used in the cure of wounds of the membranes. (See 185, to 239).

294. By these means, within forty or fifty days, the margins of the bony perforation are separated, flesh which fills the cavity is only formed, which gradually becoming harder, at last assumes the form of a bony callus, which is either concave or prominent: some pain, however, and weakness remain.

295. The inflammation, suppuration, gangrene, or fungus of the membranes, or even of the cortical substance of the brain itself, which will sometimes arise, are removed by remedies which are proper for the respective disorders, by the application of antiphlogistics, detergents, and antiseptics, by a thread, and a plate of lead (292.)

The malignity of wounds of the head is estimated,

First, By their situation. Thus wounds in the occiput, vertex, parietal bones, or upon the sutures are the worst of all.

Secondly, By the symptoms. As a fever, appearing after the seventh day, attended with coldness and tremors; a paleness, dryness, and lividness of the wound; an asperity or yellowness of the bone; a hemiplegia, or convulsions.

Thirdly, By the age of the patient.

Fourthly, By the constitution of the patient.

Fifthly, By the season of the year.

Sixthly, By the malignity and impurity of the circumambient air.

296. If after the perforation of the cranium, blood, pus, or fordes, are found lodged under the dura mater, we are boldly to make an incision in it, that thus the foreign matter may be discharged.

Wounds of the THORAX:

297. **W**OUNDS inflicted in the thorax, and not penetrating into its cavities, are known by sight; by the probe; by the impossibility of procuring a discharge of the air by any art; by the return of any tepid liquor injected into the wound; by placing the patient in the posture he was in when the wound was received; and by the sure signs of an adhesion of the lungs to that part of the pleura, through which the wound is made.

298. If wounds of the thorax descend obliquely (297) upon or within the ribs, the pleura being, by this means, frequently corroded, they deposite pus in the cavity of the thorax, especially if the passage of the pus to the external parts is by any cause obstructed. In this case an empyema is formed, and many misfortunes produced.

299. Hence, in the cure of wounds of the thorax, we are to abstain from all tents, emplastick substances, and compression; and are, on the contrary, to use depurating and balsamic substances, pledgets, slight bandage, and a proper posture of the body.

300. That a wound has penetrated into the cavity of the breast may be known, first, by comparing the cause with the largeness of the wound; secondly, by means of a probe, after the body is reduced to the same posture in which the patient received the wound; thirdly, by a strong inspiration of air into the lungs, whilst the wound is closed, upon which, if the mouth and nostrils are shut, and the wound suddenly uncovered, the air in the cavity of the breast is discharged from the wound, and frequently with a noise; fourthly, by injection; fifthly, by an emphysema, when the air, contained in the cavity of the breast, being continually increased by the action of the wounded lungs, rarefied, compressed by inspiration, hindered from

from a free evacuation through the wound, and at the lips of the wound forced into the cellular membrane, occasions frequently, that the whole body is raised into a livid, smooth tumour, which renders it sometimes eleven inches larger; but this tumour does not affect the soles of the feet, and the palms of the hands; see *Acad. Reg. Sc. 1713 Hist.* where we have an account of a mortal emphysema, from a fracture of the ribs, without any injury done to the skin; and sixthly, from a discharge of frothy blood.

301. The effects of such wounds are frequently, first, a pressure of the air, which has entered upon the lungs; which are, by that means, rendered unfit for carrying on respiration, and the circulation of the blood; secondly, an effusion and accumulation of blood in the thorax; thirdly, a putrefaction of the extravasated, heated, agitated, and every way pent up blood; fourthly, hence a maceration, corrosion, corruption and fætor of the pleura, lungs, mediastinum, diaphragm and pericardium; fifthly, an infinite number of diseases arising from these circumstances; and, sixthly, a spitting of blood.

302. The signs of blood extravasated in the cavity of the thorax are, first, an orthopnæa; secondly, the patient's lying most commodiously on his back, with difficulty on the wounded side, and the absolute impossibility of his lying on the sound side; thirdly, the consequences already said (301) to attend such a wound; fourthly, a weight in the septum; fifthly, the fluctuation of the matter; sixthly, the nature and situation of the wound inflicted; seventhly, the great weakness of the patient, accompanied with paleness, and a cold sweat; and, eighthly, the continual increase of almost all the symptoms.

303. Blood extravasated in the cavities of the thorax, is with all expedition to be evacuated; first, by a proper situation, motion, and effort of the body; secondly, by suction through a flexible tube, perforated on the sides, and blunt at the end; thirdly, by an injection

jection of diluting, resolvent and depurating liquors (see 236); fourthly, by a dilatation of the wound; and, fifthly, by another aperture between the second and third of the inferior true ribs, about four fingers-breadth from the vertebræ, and the inferior angle of the omoplata, made by a cutting instrument, and making the incision parallel to the ribs in the intermediate space between them, and directing the edge downwards. The injections may be thus prepared:

Take, of common honey two ounces; of venice-soap two drams; of sea-salt four drams; and of rain-water twelve ounces: mix all together.

Or,

Take, of sal ammoniac and nitre each three drams; of the recent urine of a sound person twelve ounces; and of common honey two ounces: mix all together.

Or,

Take, of aloes dissolved in water, duly depurated from its resinous fæces, and, again gently inspissated four drams; of sal ammoniac two drams; of borax two drams; of pure honey two ounces; of rain-water nine ounces; and of French white wine two ounces: mix all together.

304. If wounds of the thorax are distended by no tents, and uncovered rarely; if the access of the air is prevented; if by artificial suction, and a due effort of respiration, the admitted air is expelled; and if cold is avoided, they are soon and efficaciously cured, if they are curable.

305. Then all the violent symptoms before-mentioned are prevented (301.)

Wounds of the Abdomen.

306. **W**OUNDS not penetrating the cavity of the abdomen are known, first, by the probe, and the situation of the patient's body when the wound was received; secondly, by injections; and, thirdly, from a knowledge of the wounding cause and the nature of the wound.

307. If wounds penetrate deep almost to the cavity of the peritonæum, by weakening the integuments in that part, they may produce hernias even in robust patients.

308. Hence hernias must be prevented with suture and ligature, but in other respects the cure is the same with that of common wounds.

309. That wounds penetrate into the cavity of the abdomen may be known, first, by the probe and situation of the patient; secondly, by injections; thirdly, by a knowledge of the wounding cause, and the nature of the wound; and, fourthly, by the evacuation of the contents.

310. If all the symptoms are slight, if there is no pain, fever, nor inflammation; if, when the patient is laid upon the wound, no blood is discharged, and if any liquor injected returns unaltered, we may be sure that the internal parts are not hurt.

311. The wound must be immediately defended from the air, and that part of it which has already entered, is to be removed by suction and strong efforts in expiration. The integuments must be reunited by the sutures usual in gastroraphy. But tents are by no means to be used, since the wound will be easily cured by anointing it with proper balsams, lying on it, dressing it seldom, rest, and a mild, moistening, and slender diet.

312. If there is an acute pain, a fever, and the signs of an inflammation, if blood, ichor, drink, aliments, chyle,

chyle, bile, pus, urine, excrements, and a fetid smell come from the wound, if the wounding cause, the situation of the patient, and the nature of the wound are considered; and, if paleness, cold sweats, inquietudes, deliquiums, and defective pulse are present, they discover that the abdominal viscera are injured, and which of them are so.

313. Hence numberless disorders ensue partly, first, from the tender vascular and unmuscular nature of the viscera in which the circulation is slow and not to be performed unless the abdomen is entire; secondly, from the injured function of some particular one of the viscera; thirdly, from the quantity and corruption of the extravasated blood; and fourthly, the action, pressure, and rarefaction of the air which has entered.

314. Hence these wounds often prove mortal: but wounds of the intestines to which the surgeon's hands can have access, are to be united by proper suture; but if small left to themselves; and the other measures to be taken are the same with those recommended in (311.)

315. If a sound intestine comes out of a large wound it is to be fomented with live animals cut open and applied to it, or with some other proper fomentation, after which it must be replaced, and the rest of the cure managed in the manner directed in (311); a fomentation proper for this purpose may be prepared thus:

Take, of the pure intestines of a young animal a sufficient quantity, boil in a sufficient quantity of water for three or four minutes, then add of the flowers of chamomile, lavender, and centaury each half an handful; and of the leaves of mint one handful; let them stand in infusion for three or four minutes longer: and let the decoction be used for a fomentation to be applied with cloths. Recent tepid milk may be used as an extemporaneous fomentation.

316. If

316. If an intestine tumid with flatulence, inflamed, or distended with fæces, comes out of a wound so small that it cannot be again replaced, this end is to be obtained either by a fomentation or puncture of the intestine, or a dilatation of the wound.

317. If by a wound, a suppuration, or a gangrene, a part of the intestinal canal is destroyed, the superior part presenting itself or prudently come at, is to be sewed to the lips of the wound.

318. If the omentum comes out, and is yet moist, warm, and is yet red with blood of a natural colour, it is to be replaced in the manner directed in (316.)

319. But if it is dry, cold and livid, the corrupted part must be removed by section or ligature, and the remaining sound part fomented and replaced. The fomentation proper for this purpose is found in (315.)

320. When the large intestines are not hurt, the most efficacious remedies are copious venesection, clysters injected in the beginning, a mild diet, a free respiration, rest, and a commodious situation of the patient. A clyster may be thus prepared,

Take, of common honey three ounces ; of sea-salt one dram ; and of barley-water six ounces: mix for a clyster to be injected morning and evening, the first three days after the reception of the wound.

The diet ought solely to consist of broths prepared with flesh and a little salt.

CONTUSIONS.

321. **I**F an obtuse hard body, either by its motion, resistance, pinching, or pressure, causes a rupture of a great many small vessels at once, the injury thus received is called a contusion.

322. We

322. We must, therefore, consider a contusion as an accumulation of minute wounds, with an attrition of the solids and capillary vessels.

323. The effect, therefore, of a contusion is,

First, A lacerating solution of continuity.

Secondly, An utter destruction of many of the small parts.

Thirdly, An effusion of liquids into the adjacent cavities, or cavities formed in consequence of the injury; besides many other bad effects.

324. But the worst sort of contusion (323) is, when the internal parts are affected in the manner already described, (321, 322, 323) whilst the integuments cohere, and confine the extravasated fluids within; which, therefore, stagnate, coagulate, and putrify.

Various misfortunes arise from this, the principal of which are these following.

First, An ecchymosis.

Secondly, A spurious aneurism.

Thirdly, Sugillation.

Fourthly, Ulcers and gangrenes.

Fifthly, Caries.

Sixthly, Scirrhus and cancers in the glands.

325. Contusions often affect the bones, and are then productive of disorders analogous to those which are caused by contusions of the head described under (249, 250, 251, 254, 256, 257): Hence the marrow is injured; and from this source arise ulcers, fistulas, caries, and putrefaction; for the marrow is situated in the bones, as the brain is in the cranium (273, 274.)

326. Sometimes the muscular parts are injured by contusions; whence considerable suppurations, gangrenes, palsies, and contractions. But if, from a contusion, any large nerve, which sends out a great number of branches, is corrupted, then a palsy, atrophy, certain and incurable insensibility, or gangrene, of all the parts below the contused nerve ensue: And

this

this is in a particular manner true, with respect to the spine of the back, and the medulla thereof.

327. Sometimes contusions injure the viscera; whence arise inflammations, suppurations, gangrenes, scirrhuses, and a depravation of the functions peculiar to the part affected.

328. From what has been said (322, 323, 324, 325, 326, 327), many and miserable disorders, the consequences of contusions (321) may be readily explained and prognosticated, and these both of the acute and chronical kind.

329. A contusion is discovered, and the part affected is distinguished.

First, By the sight and touch.

Secondly, By the effects, as pain; stupor; a sense of weight; a change of the natural colour to red, brown, lead colour, black, yellow, or green; hæmorrhage, or gangrene (323, 324, 325, 326, 327.)

Thirdly, By comparing the part affected with the cause of the injury.

330. Hence we understand; first, that an internal and large contusion of any of the more noble viscera is incurable, and the frequent cause of diseases and death.

Secondly, That contusions of the bones are very dangerous, and difficult to cure; especially when they happen near the joints; and when the marrow is injured.

Thirdly, That contusions of the cranium are worst of all, on account of the vicinity of the brain.

Fourthly, That contusions of the larger glands, as those near the ears and armpits, those in the breasts; the pancreas, the groin, and uterus, endanger a scirrhus, a cancer, and all their consequences.

331. In the cure of a contusion, resolution must be attempted; suppuration must, if possible, be prevented; but much more a gangrene.

332. Resolution is accomplished by removing the extravasated liquids, without any farther injury to the vessels.

333. This resolution is brought about ; first, by rendering the extravasated humours fluid.

Secondly, By relaxing the adjacent vessels.

Thirdly, By procuring the resorption of the extravasated humours into the vessels, by evacuating these vessels, or by frictions.

334. Bleed therefore plentifully ; soon after exhibit a strong, but not inflammatory purge ; let a penetrating, relaxing, and resolvent fomentation be applied to the part ; and let warm frictions be used : in the mean time internal resolvents, sudorifics, and diuretics, are of considerable service.

Purges which operate powerfully, without producing inflammatory effects.

Take of agaric two drams and an half ; and of sal polychrestus one scruple : mix up for a purge.

Or,

Take of the recent middle rind of elder or dwarf elder one ounce ; triturate it with a sufficient quantity of rain-water ; then boil gently and express the liquor, of which four ounces are to be for a dose.

Or,

Take of jalap prepared as in Sect (217) one dram and an half ; of the powder of mechoacan-root two drams ; and of the recent leaves of soldonella one ounce : mix up for a purge.

Or,

Take of agaric two drams ; of sena-leaves three drams ; of mechoacan-root one dram ; and of tamarinds two ounces. Cut and bruise these together, macerate them for half an hour in rain-water ; then let them boil gently for half a quarter of an hour ; and, with every nine ounces of the strained decoction, mix of sal prunella half a dram ;

dram ; of solutive syrup of roses with fena nine drams : of this preparation let the patient take one ounce every half hour, till he is briskly purged.

A preparation, in lesser bulk, answering the same intention.

Take of syrian scammony thirteen grains ; of diaphoretic antimony twenty grains ; and of solutive syrup of roses with fena six drams. With these ingredients, sufficiently triturated, mix half an ounce of the distilled water of succory for a draught.

Several simples, of a resolvent quality, may also be infused in water for this purpose : thus for instance,

Take of white bryony-root two ounces ; of round birthwort one ounce ; of the recent leaves of rue and savine each one handful ; of the flowers of tansey, chamomile and feverfew each one ounce ; and of recent onions six ounces. Digest these for half an hour in a close vessel, with a pretty strong heat ; then let them boil for a moment ; then, with every twenty-five ounces of the liquor, strongly expressed through a cloth, mix half an ounce of the meal of linseed. After this let it boil a little again, and with the whole of the decoction, when cold, mix of *spiritus vini theriacalis* two ounces ; and of sal ammoniac one ounce. Let this be applied by way of fomentation, with woollen cloths.

This intention may be also answered by cataplasms and plaisters ; formulas of which are these following.

Take the ingredients of the above-mentioned fomentation, prepare them into a cataplasm, and add, of the meal of linseed a sufficient quantity ;

Of Wounds in general.

of galbanum dissolved in the yolk of an egg one ounce; and of the oil of chamomile an ounce and an half.

A plaister for the same purpose.

Take of the powder of bryony-root two ounces; of the flowers of sulphur one ounce; of æthiops mineral three drams; of pure and well dissolved galbanum four ounces; of melilot-plaister nine ounces; and of the oil of chamomile a quantity sufficient for forming all into a plaister.

Besides these, the following plaisters contribute to answer these intentions.

Emplastrum de galbano.

de baccis lauri.

de betonica.

de cumino.

cephalicum.

diachyl. cum gumm.

diaphoreticum.

ischiadicum.

de meliloto.

e mucilaginibus.

oxycroceum.

de ranis.

idem, cum mercurio.

335. The order in which these are to be used, the necessity of repeating them, and their respective degrees of strength, are to be regulated by the consideration of what has been said above (334), and the danger which is threatened.

336. Whilst these methods are pursued, a very slender regimen, and one which is opposite to putrefaction, is required. (See 81, N. 1. and 35, N. 1.)

337. If the contusion is so considerable, as not to admit of resolution, and is so situated, as to admit of assistance

assistance from manual operation, scarification, aperture, and suppuration, are to succeed the methods of cure above directed (334), which, in the mean time are not to be discontinued. If the disorder is already so violent, as to produce a mortification, or so considerable, that intolerable pains, inflammations, suppurations, atrophies, fevers, and death, can certainly be foreseen, the part affected is to be extirpated, if possible. (464 to 475.)

338. The method of cure, above specified (331, 332, 333, 334, 335), will perform more than could readily be expected; especially as nature spontaneously assists, and that in a very remarkable manner, in attenuating, resolving, dissipating, and dispelling what is offensive to her.

FRACTURES of the Bones.

339. **W**HEN, by any force, the parts of a bone are divided into large fragments, the disorder is called a fracture.

340. If this fracture is but single, and attended with no more circumstances, it is called a simple fracture; and when it is accompanied with a wound, a contusion, an inflammation, an ulcer, or several other fractures, it is called a complicated fracture.

341. Fractures are called transverse, oblique, or longitudinal, according to their different directions. They also receive various Names, and require different methods of treatment, according as the portions of the bone either rest on each other, or are mutually applied to each other sideways, or rise into the flesh like prickles.

342. The effects of a fracture are various, according to the different natures of the bones fractured, the different directions of the fracture; the State of the fractured portions with respect to situation, figure, number, and bulk; and according to the nature of

the Place in which, and the Parts near which, the fracture is made.

343. The immediate consequences of fractures are, an incapacity of supporting the body ; as also, of sustaining and directing the muscles ; a contraction of the muscles ; a shortening of the member ; a removal of the muscles from their natural situation ; an intorsion and deformation of the member ; a laceration, contusion, or corruption of the internal periosteum, of the medullary membrane, and of the marrow itself ; a luxuriancy of the vessels of the bone : Whence arise an inequality of the callus, a tumor and deformity of the member ; together with a distraction, laceration, irritation, compression, and convulsion of the membranes, tendons, and nerves ; a change, destruction, obstruction, and inflammation of the adjacent vessels, together with pain, ecchymosis, extenuation, suppuration, gangrene ; the mortification of a part, and often the whole, of the member, and almost always contusion.

344. The things specified in (342, 343) evince the presence of the disorder, and enable us to judge of its state ; if the touch discovers fragments ; the ear crepitation ; the eye a change of figure and immobility ; and, if at the same time the mind considers the cause, its impetus, the method of the impulse, and the efficacy of decrepit old age, a morbid habit, and the winter cold, the diagnostic will be the more certain and infallible.

345. But there is a difficulty in discovering an oblique fracture, till very late ; pain however, tumor, a thickness and inequality of the part, an unseemly pus, and the force of the cause known, afford some light in this case.

346. The figure, simplicity, composition, and duration of the fracture ; the number, figure, and magnitude of the fragments ; the place of the bone affected ; the adjacent parts hurt ; the season of the year ; the age and constitution of the patient, will direct us in fore-

foretelling whether the cure will be easy, or difficult; quick, or tedious; entire, or partial.

347. The cure requires, first a restitution of the part to its natural situation by extension and reduction; secondly, a retention of it in that situation, by proper bandages and machines; and, thirdly, a consolidation of the parts thus united and retained, by the formation of a callus.

348. If the broken bones retain their natural situation, the first indication ceases.

If they diverge but little to the sides, only a small extension is requisite.

If the parts of the bone are so drawn over each other, as that their sides are mutually applied to each other, a strong extension is requisite in order to remove whatever is intercepted between the divided parts, and procure a due length of the bone, and an adaptation of its parts.

349. Extension is performed, first, by laying hold of the bone near the fracture, either with the hands, or with slings; secondly, by securing the patient; thirdly, by placing the member in its natural situation; fourthly, by a slow, strait distraction of the fractured parts, with such strength, and as far as the force of the contracted muscles requires; and, fifthly, by the force and application of proper instruments and machines, if the strength of the hands is not sufficient for making the extension.

350. But as these things (348, 349), often cannot be done without violence and pain; when the parts are already much inflamed, it is often expedient to delay them till the inflammation is abated, otherwise the patient may die convulsive, or be seized with a gangrene.

351. If the fragments of the bone are loose and disengaged, they are to be taken out, if it can easily be done; if the protuberant points of the fragments forbid the extension, and are exposed to view, they are to be cut out; and, if they are latent, they are to be discovered by a proper incision. If the fracture

is compound and very much complicated, especially when it is accompanied with a violent contusion, a shattering of the bones, or a destruction of large vessels, amputation is forthwith required, if no circumstance contradicates it.

352. The reduction is made, by slowly and cautiously moving the part duly extended, as in (349) and prepared, as in (351), in such a manner, as that the parts of the broken bone may meet each other in a proper place, the distorted muscles be restored to their proper situation, and nothing intercepted.

353. This is discovered by anatomy, the comparison of the injured, with its corresponding sound member; an alleviation of the pain, and the restitution of the natural length and figure of the member.

354. The retention of the parts in their situation is obtained, by bandage, compresses, splints; by procuring to rest the member by proper machines, and by hindering and directing the action of the muscles.

355. Too tight bandages produce tumors, suffocations, and gangrenes; whence arise an incredible number of misfortunes. The bandages therefore ought to be slightly applied, though in such a manner as to secure the parts, and gently compress the vessels.

356. If there are wounds, they must be treated as directed, from (185 to 239), but they are to be rarely dressed.

357. By these means there will be a concretion, and a callus will be formed sooner or later, according to the age of the patient, the thickness of the bone; and the weight it is to sustain, at various times between the twentieth and seventieth day.

LUXATIONS.

358. A luxation is a recess, or removal, of the moveable extremity of a bone, from the hollow or socket

socket in which it is naturally moved, accompanied with an impediment or hindrance of motion.†

359. The removal of the articulated bone from its cavity is either total, or partial; the former is a luxation, and the latter a distortion.

360. The worst luxation of all is, that produced by a solution or separation of the Epiphysis from the body of the bone.

361. The cause of a luxation may be an external force, extending, intorting, or expelling the head of a bone from its cavity.

362. A luxation may, also, proceed from an internal cause, formed in the cavity of the articulation, and forcing the head of the bone contained, out of its socket.

363. These causes last mentioned (361, 362) are assisted, in producing their effects, by an extension, relaxation, or rupture of the ligaments, whether by an external, or an internal cause.

364. Luxations produce a change of figure in the part, tumor, hollowness, a shortening, and sometimes an elongation of the member, immobility, distraction of the muscles, torpor of the subjacent parts, a palsy, a compression of the adjacent vessels, pains, watchings, an inflammation, an œdema, an ankylosis, convulsions, extenuation, the mortification of the part, or the death of the patient.

365. From what has been said the evident signs of a luxation may be drawn.

366. After a minute consideration of the bulk, figure, situation, the parts compressed and intercepted, the time of the duration, the concretion of the luxated parts, the pain, the inflammation, and other symptoms; the thinness, or thickness, of the surrounding parts; the ligaments destroyed, or lengthened; the affixed muscles, and the like, we are to form a prognostic; which teaches us, whether the cure will be entire or imperfect, quick or slow, easy or difficult.

367. To

367. To the cure, then, of a luxation, two things are necessary: first, a reduction of the luxated parts; and, secondly, a retention of them in their natural situation.

368. The reduction is made, first, by securing the body of the patient; secondly, by moving the luxated member, so as to make its head correspond to its cavity, by intorsion, thrusting, or other proper methods.

369. The reduced members are retained in their situation by rest, proper bandages, and by keeping the parts in their natural situation.

INFLAMMATIONS.

270. **T**HAT disorder, to which we give the name of inflammation, or phlegmon, is so called, because it produces effects similar to those of fire.

371. An inflammation is a pressure, and attrition of the red arterial blood, stagnating in the smallest canals; produced by the motion of the rest of the blood, thrown into violent and forcible commotions, by means of a fever.

372. An inflammation may, therefore, happen in the extremities of the arteries, or in the vessels which convey the serum and lymph; or, in other smaller arterial vessels, which, in consequence of the dilatation of their mouths, have admitted the red globules, or other thick elements of the fluids, but cannot convey them through their extremities. If the blood, also, is conveyed into those veins, which ought only to contain the spirits, an inflammation is produced. *Celsus.*

273. The Seat, therefore, of an inflammation is every part of the body, in which there are reticular distributions of arteries, or the origins of lymphatic and arterial vessels.

374. Hence inflammations may happen in the arteries, veins, membranes, muscles, glands, bones, cartilages, tendons, all the Viscera, and consequently almost in all the body; but no where more frequently, or obstinately, than in the fat.

375. This

375. This stagnation (371) is produced in the most minute arteries, by whatever presses, distracts, distorts, ruptures, contuses, burns, corrodes, or corrugates the extremities of the vessels, whether conical, or cylindrical, in such a manner, that the diameters of their cavities are less, than those of the particles of blood, which ought to pass through them. The same misfortune is also produced by heat, violent exercise, sharp bodies fixed in the parts, ligatures, incumbent weights, acrid substances taken inwardly, or applied externally, intense cold, and strong frictions: all the causes of Wounds, contusions, corrosions, fractures, luxations, and obstructions, also produce the same effect.

376. A stagnation is also produced by whatever blocks up the passages, and, at the same time, applies to the parts any thing of an acrimonious quality; such as oleous, saline, and acrid substances.

377. Stagnations are, also, produced by such things as coagulate the blood, such as violent exercise, and an evacuation of the finest parts from the blood by sweat, urine, saliva, and diarrhæas; coagulating substances, also, produce the same effect.

378. A stagnation is, also, produced in the lymphatic, arterial vessels; first, by all the causes, which so enlarge their orifices, that the grosser parts of the blood enter them; which, being propelled farther, arrive at narrower parts, where they undergo all the changes mentioned in the preceding aphorism. Among the causes of this kind are the laxity of the vessel at its beginning, and the virulent motion of the arterial fluid; and, secondly, by all the causes common to inflammations of whatever kind (375, 376.)

379. Hence a similar disorder may happen in every conical vessel, where the fluids are conveyed from wider to narrower parts; for, as in the red blood, so also in the lymph, there is, perhaps, a part thicker than the rest.

380. From what has been said appears the true difference between a phlegmon, an erysipelas, an œdema, and a schirrhus with inflammation.

381. When the causes, already mentioned (375, 376, 377, 378, 379) have produced a stagnation (371, 372, 379) in the vessels (372, 373, 374, 378, 379); then the force of the blood, impelled by the vital powers, produces such effects, as are the signs of an inflammation,

These signs are considered and enumerated, in their due order, in the following paragraph.

382. First, the minute and hardly visible arteries, being obstructed, are enlarged by the distending blood, by which means a red tumor is produced: secondly, the same happens to the arterial lymphatic vessels, before pellucid and invisible; by which means the redness is increased, especially when the tender vessels and vehicles in the membrana adiposa are filled with a thick blood, deprived of its more liquid parts: thirdly, the distended vessels are ready to burst; hence arises the pungent pain in the minute nervous fibres, dispersed through them: fourthly, the liquids, and solids, are rendered highly compact; hence arise the hardness and resistance of the part: fifthly, by means of the accumulated red part of the blood, and the strong impulse of the succeeding fluids, the part assumes a shining red colour: sixthly, by means of the resistance, pulsation, collision, and coarctation of the as yet pervious vessels, by the tumor, there is a violent mutual attrition produced between the parts of the fluid among each other, between them acting upon the solids, and the solids upon them; hence arise the heat and burning: seventhly, the pulsation is produced, because the impetus of the blood, propelled from the heart, acting upon the extremities of the obstructed vessels, dilates their sides: eighthly, by the irritation of the fibres, and the accelerated motion of the blood, and because it is returned thro' the veins, and stopped in many arteries, the pulse is rendered

dered quick, and a fever, accompanied with thirst, heat, watching, weakness, and uneasiness, produced.

383. This is a species (382) of the disorder, as yet not arrived at its full height.

384. In inflammations, blood freely discharged from a large orifice made in a vein, and received in a bason, when it becomes cold, forms a white, hard, thick, and rigid pellicle, almost like a swine's skin.

385. In proportion as the disease increases, the same train of symptoms we have already enumerated (382, 383, 384) are proportionably augmented, the expressed lymph is separated, and the red part of the blood condensed.

386. If the circulating humours are mild, their motion not excessive, the obstructing cause not too much confirmed, the obstruction itself small, and especially in the arteries, or beginnings of the lymphatic vessels; if the canals are moveable, and a sufficient quantity of diluting lymph is contained in the blood, the concreted humours are rendered fluid, those that were stagnant put in motion, the inflammation is terminated by resolution.

387. If the circulating humours are mild, their motion accelerated, the obstruction great, incapable of a resolution (386), and attended with a violent train of symptoms (382, 384, 385), the vessels distended, and ruptured with pain, heat, pulsation, and tumor, discharge their contained fluids, which are resolved, become gently putrid, and produce an attrition on the tender solids, which they dissolve, and mix with the fluids into one homogeneous, white, thick, glutinous, and pinguious humour, called pus. This is suppuration, the other manner in which inflammations terminate.

388. If the humours are acrid, and their motion violent, the obstruction great, the vessels rigid, and all the symptoms (382, 386, 387) violent; then the vessels are suddenly ruptured, the fluids become putrid, and the ichor discharged is collected under the skin,
like

like the washings of flesh, or a yellow sanies: the colour of the part becomes cineritious, pale, brown, and at last black. The redness, pain, heat, pulsation, and tumor cease in the part affected, but appear in those adjacent; the part affected becomes mortified, and this is called a gangrene, the third manner in which inflammations terminate.

389. When an external compression happens to a part thus affected (388), or when an intense heat dissipates the fluids, the mortified part becomes indurated, like a piece of dried leather, and suffocates, and corrupts the parts, which lie under it.

390. Things actually, or potentially, cold, astringents, coagulating substances, repellents, pinguious, and acrid substances; those of an emplastick nature, narcotics, strong ligatures, and external compression, soon promote this change of an inflammation into a gangrene (388).

391. Then a continuation of the use of the abovementioned things soon change the disorder into a sphacelus.

392. If the part inflamed is glandular, the internal, or external heat great, the impacted matter immovable and thick, the emunctories of the glands obstructed, and their follicles and sides distended, an hard tumor, free from pain, is formed in the glands, which is called a scirrhus; the fourth manner in which an Inflammation terminates.

393. The cause, the part affected, the largeness, the deepness, the quick increase, and symptoms of the inflammation, together with the nature of the patient, compared with the signs and effects, afford the most infallible prognostic.

394. It is also obvious, that various intentions of cure must be pursued, according to the various states of this disorder,

395. If any of the causes, therefore, already enumerated (375, 376, 377, 378, 379), produce an inflammation (371), in any part (372, 373, 374, 379); so that the first enumerated symptoms (383, 384), and
condi-

conditions (386), are present, the following intentions of cure are to be pursued.

1st, The farther injury of the vessels is to be prevented.

2d, The injury already done them is to be removed.

3d, Fluidity and mildness, are not only to be restored to, but also preserved in, the obstructing matter.

4th, Or, if this end cannot be obtained, it is to be forced back into larger vessels.

396. The farther injury of the vessels is prevented;

1st, By removing, or correcting, the known productive causes (375, 376, 377, 378, 379) of the inflammation.

2d, By lessening the impetus of the arterial blood, by means of venesection and purging.

Proper purges are,

Cream of tartar six drams.

Crystal of tartar six drams.

Tartar itself six drams.

Sal polychrestus five scruples.

The pulp of tamarinds three ounces.

Tamarinds four ounces.

Elder rob four ounces.

Rhubarb a dram and an half.

Take of the best rhubarb one dram; of sal polychrestus a scruple and an half; of the syrup of succory with rhubarb one ounce; triturate all together, and mix with two ounces of the distilled water of elder flowers, and two drams of cinnamon-water, for a draught.

Take of the pulps of the best tamarinds two ounces; of crystals of tartar, reduced to a fine powder, three drams: mix all together, and let the
the

the patient take one dram every half quarter of an hour, till he is purged.

Take of the best fena-leaves, without the stalks, two drams; of the best agaric one dram; of the best tamarinds two ounces: boil for a quarter of an hour in a close vessel, with the distilled water of elder-flowers. Then, with every five ounces of the expressed decoction, mix of pure nitre one dram; and of the solutive syrup of roses with fena six drams, for a draught.

Take of fena-leaves three drams; of tamarinds two ounces; and of agaric three drams: boil for a quarter of an hour with water, and with each pint of the decoction, mix of the syrup of succory with rhubarb, one ounce: of this let the patient take an ounce every half hour, till he is purged. (See the rest in 334.)

3dly, By lessening the quantity of the humours, by means of venesection and purgatives.

4thly, By deriving the impetus of the blood to other parts by suction, friction, epispastics, vesicatories, fomentations, baths, fontanels, setons, and strong purging.

5thly, By a somewhat cold and dry air; the total extinction, or, at least, great moderation of the passions; rest, either natural or artificial; a thin liquid, and antiphlogistic diet; drink of the same kind; together with diluting, and at the same time refrigerating medicines.

A medicine, which is at once of a diluting and a refrigerating quality.

Take of the roots of sorrel two ounces; of the roots of grass, and vipers-grass, each three ounces;

ounces; of the leaves of brook-lime, wood-forrel, and agrimony, each one handful: boil in water for half a quarter of an hour, then add, of the flowers of borrage, bugloss, roses, and violets, each one pugil. Let them stand in digestion for half a quarter of an hour; and when depurated, with every three pints of the liquor, mix of pure nitre two drams; and of elder-rob three ounces: of this preparation let the patient drink three ounces every hour of the day.

Or,

Take of the distilled water of elder-flowers fifteen ounces; of elder-rob two ounces; and of pure nitre one dram: mix all together, and let the patient drink an ounce of the liquor every hour.

Or,

Take of the bruised seeds of the burdoc four drams; of the seeds of parsley six drams; and of the seeds of succory one ounce: with distilled parsley-water, make into an emulsion; with every twelve ounces of which mix of pure nitre, one dram; and of the syrup of the five aperient roots an ounce: of which preparation, let the patient take an ounce every hour.

Or,

Take of unwashed diaphoretic antimony one dram; of sal prunellæ half a dram; and zedoary-root one scruple: make into a powder, to be divided into six doses; one of which is to be taken every three hours, in some proper ptisan.

6th, By allaying the impetus in the part affected, by the external application of refrigerants, repellents,

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and

and astringents; variously mixed up with anodynes and aperients, as the nature of the case seems to require.

397. The injury done to the vessels is removed by the use of the same things mentioned in (396), the preceding aphorism; for, the preternatural distraction being removed, the proper strength of the fibres will restore it to its natural form, and nutrition will afford a fresh supply of strength.

398. The fluidity of the obstructing matter is procured by attenuating, and diluting it.

1st, By restoring the elastic oscillations of the vessels; by diminishing the distending fluids, by means of venesection, and strong purging; as also, by adding a stimulus to the fibres, by means of thin aromatic liquors drank warm; fomentations, frictions, the application of cupping-glasses, and scarifications. (See 107, to 144.)

A thin aromatic liquor, to be drank warm.

Take of white, yellow, and red-sanders each one ounce; of the roots of the carline thistle one ounce; of parsley and fennel-roots each three ounces: boil for half an hour in water; then add of the shavings of saffraas two ounces; and of the leaves of betony, rue, scabious, and colts-foot each an handful: let them stand in a very hot digestion, for half an hour, in a close vessel; and of the depurated liquor let the patient have five pints, of which let him take two ounces every hour warm.

2d, By drinking other thin and aqueous liquors warm, and diluting the impacted matter. (See 107, to 144.)

3d, By using attenuants, resolvents, and things opposite to the nature of the obstructing matter, both internally and externally, either in the form of decoctions,

tions, baths, fomentations, steams, cataplasms, plasters, or ointments (See 107, to 144.)

399. The lenity of the humours is procured by drinking aqueous liquors; by a mild diet; by medicines gently diluting and obtunding; or, such as are in a singular and specific manner opposite to the prevailing acrimony.

400. The obstructing matter is forced from narrow to wider parts of the vessels;

1st, By a large evacuation of the arterial and venous fluids, by means of venesection.

2d, By a relaxation of the fibres.

3d, By artificial frictions.

401. Hence in all inflammatory diseases, whether internal or external, we understand what that resolution is, which is always to be desired, if possible; what a perfect cure of an inflammation is; as also, what a cure without a crisis is (386).

ABSCESSSES.

402. **I**F the measures recommended (in 395, 396, 397, 398, 399, and 400) being either totally neglected, taken in vain, or used too late, the inflammation tends to a suppuration, (mentioned in 387); and if this is discovered by the signs there laid down, the most proper intentions of cure will be,

1st, With all expedition to mature the crude matter into one uniform humour.

2d, To soften the crude and the adjacent matter.

3d, To invite it to the external parts.

4th, To procure a discharge of the concentered pus.

5th, To cleanse the place; and,

6th, To proceed in the cure, as in that of a common wound.

403. The maturation of the pus is procured by such things as,

1st, increase the motion in the part, by fomenting, stimulating, and heating it, by things either actually,

or potentially hot, and which produce the same effect by creating a gentle fever.

2d, Which confine the motion and heat excited to the part affected, by hindering an excessive exhalation and dissipation, by obstructing, glutinous substances, and by an alleviation of the excessive acrimony. The medicines proper for maturing pus are, therefore, first, the simple aromatic gums; such as gum ammoniac, bdellium, elemi, galbanum, opoponax, and sagapenum; and, secondly, the emolient, relaxing, and moistening medicines, (prescribed in 54, N. 4). Formulæ for this purpose, are these following;

Take of ry-meal four ounces; of vinegar two drams; and of galbanum dissolved in the yolks of eggs one ounce: boil in water to the consistence of a cataplasm, adding towards the end an ounce of the oil of white lilies.

Or,

Take of the recent leaves of sorrel four handfuls; and of fresh butter one ounce: boil gently over the fire, and then add two ounces of the crumb of bread, and four drams of sagapenum dissolved in the yolks of eggs: make into a cataplasm.

Or,

Take of honey boiled to a considerable consistence four ounces; of onions roasted under the ashes three ounces; and of fat figs four ounces: boil in a small quantity of water, adding an ounce and an half of linseed-meal, for a cataplasm.

Or,

Take of excorticated oats one ounce; of the meal of recent linseed two ounces; of the bulbs of white-lilies three ounces; and of the flowers of marsh-mallows one ounce: boil in recent milk, adding

adding two ounces, of fresh butter, for a cataplasm.

3d, By moderating the circulation of the humours in such a manner, as that it shall neither be too languid, nor too much accelerated. The use of the decoction (specified in 398, N. 1) excites a sufficient motion of the fluids.

4th, By leaving the part close, till all the inflamed and irresolvable matter is suppurated; for, by these means a laudable pus will be formed in the part.

404. Unless the inflamed matter is thus changed, it is not only unprofitable, but also dangerous to open the abscess.

405. The softness of the part, the fluctuation of the tumor, when pressed; its whiteness, the remission of the pain, heat, redness, tension, pulsation, and fever; the pointed apex of the tumor, and a sense of weight succeeding the pain, are signs that the pus is already formed and fit for evacuation.

406. But if the pus is left long confined in a close place, it is attenuated; becomes acrid, putrifies, is increased, consumes, and corrodes the adjacent parts; and by its bulk, weight, and motion, produces sinuses and fistulas, which are different in various places, but worst of all in the intestinum rectum: or, the thinner part of the pus being dissipated, the remainder becoming indurated produces hard tumours, especially about the glands: or, lastly, the pus being absorbed into the corroded mouths of the lymphatic and sanguiferous vessels, is mixed with the blood, contaminates it, and, being collected in the viscera, corrupts them by malignant congestions, and disturbs their functions, by which means an infinite number of violent disorders are produced.

407. By the same remedies with those (specified in 403), the external and internal integuments of the

suppurated place, as also the adjacent parts, are softened, attenuated, and relaxed.

408. By the means specified in (407), the resistance of the integuments being lessened by the maturing medicines (prescribed, in 403), the pus formed is forced outwards, or brought to the surface.

409. Then gently acrid substances, mixed with those of the emollient and gently pinguious kind, are to be applied, that the mortified integuments may be laid open with greater ease to the surgeon, and less pain to the patient; for this purpose,

Take of the crumb of stale bread two ounces; of the shavings of Venice-soap two drams; of honey half an ounce; and of the oil of chamomile by infusion two drams : make into a cataplasin.

This intention is also answered, by the medicines prescribed (in 403, N. 1, and 2.)

410. Then, pressing the pus sufficiently into the tumor, the knife is to be introduced into the inferior part of the softest, whitest, and most prominent portion, till the pus coming out evinces, that a sufficient penetration is made. Then let the knife be raised equably upwards, so as to make a large incision, or, forcing its point through the opposite part of the abscess, let the intermediate integuments be divided, taking care to avoid the fibres and vessels.

411. Then let the ulcer be cured by cleansing, suppurating, digestive, balsamic, deterfive, and drying medicines, which are to be varied according to the state of the part, as is directed in the doctrine of wounds (from 192, to 220.)

412. If the patient is afraid of an incision, let a caustic be applied to the part (mentioned in 410), the eschar is to be separated by means of butter; and the rest of the cure performed, as directed (in 410, and 411.)

For

For a Caustic.

Take of pot-ashes four ounces; and of the quicklime of liege six ounces; bruise and mix together, then let them melt in a moist place, filtrate and inspissate, fuse in a crucible over a strong fire, and pour out in small concretions, to be carefully kept in a close-stopped vessel: let a little of one of these concretions, rasped and put upon a pledget, be applied for two hours, then, wiping off the caustic, let butter be applied.

Or,

Let a small quantity of the butter of antimony be applied to the top of the protuberant abscess.

Or,

Let the lapis infernalis be applied to it for some time.

FISTULAS.

413. **F**ROM what has been said (in 406) we may easily understand the origin, cause, nature, places, and effects of sinuses and fistulas.

414. Sinuses and fistulas (413) are easily known when open; and when close, are discovered by perceiving a soft cavity with the touch.

415. They are cured by laying open the inferior part, by filling the cavity with liquid digestives appropriated to their various conditions, by injecting deterfives, a ligature gradually pressing from one extremity of the fistula to the aperture, but soonest of all by an artificial incision of the integuments above a grooved or silver probe or by means of an instrument called the *Syringotomum* destined for that purpose.

A liquid digestive may be thus prepared.

Take of native turpentine two ounces; of the yolks of eggs one ounce; with these when, sufficiently incorporated, mix of common honey two ounces; of common spirit of wine four Drams; and of common water nine ounces. These, when duly mixed and rendered sufficiently hot, are to be injected into the fistula.

Or,

Take of the liniment of arcæus and the yolks of eggs each an ounce; mix and dilute in eight ounces of common spirit of wine: to be injected in the same manner with the former.

Deterfives may be prepared in the following manner.

Take of the honey of roses two ounces; of the elixir proprietatis prepared with salt of tartar half an ounce; and of *Barbers lixivium* eight ounces: mix together.

Or,

Take of the roots of the greater birth-wort two ounces; of the dried leaves of scordium one ounce; and of bruised juniper-berries one ounce: boil for the space of an hour in a long phial with weak spirit of wine; with twenty ounces of which mix one ounce of Venice-soap. The use of this medicine is the same with that of the former.

When the fistula is sufficiently clean and pure, it is to be consolidated by the following injection.

Take of the oil of St. Johns-wort by infusion four ounces; of aloes, myrrh, and olibanum each two drams: boil gently and incorporate with
two

two ounces of the yolks of eggs : and when moderately warm inject into the fistula.

416. Hence we become acquainted with the knowledge, prognostics, and cure, of a bubo, a parotis, a boil, an anthrax, a carbuncle, a phyma, an erysipelos; the measles, the small-pox, and red efflorescences of the skin.

417. Hence also we may easily know the event of an internal suppuration, to which the surgeons hand has not any access; for hence arise the many terrible disorders specified (in 406, and 413) and collections of pus in the cavities of the body.

418. If the necessity of the part affected to life or health is known, prognostics are easily made, and the difficulty of the cure perceived.

G A N G R E N E.

419. **I**F a gangrene succeeds an inflammation, a different method of cure is requisite. A gangrene is a Disorder of any soft part of the body, tending to a mortification in consequence of the influx of the vital humour, into the arteries, and their return through the veins being prevented; whereas a sphacelus destroys all the vital action of the part affected, whilst life remains in the other parts.

420. A gangrene, therefore, generally affects only the membrana adiposa; whereas a sphacelus affects all the parts, as far as the bone. A gangrene is previous to a sphacelus, which generally succeeds it, unless it derives its origin from the corruption of the bone, the marrow, or the periosteum. But a singular kind of gangrene, which is without fever, inflammation, or loss of the natural colour, may be produced in the parts lying under the spinal marrow, by a contusion of that part (320).

421. A gangrene, therefore, and sphacelus, have one common cause; but these disorders differ with respect to violence, duration, and the parts they affect.

422. 1st,

422. 1st, A Gangrene and sphacelus may, therefore, be formed by all those causes which produce an inflammation (375, 376, 377, 378, 379), especially if the fluids become stagnant, and if the action of the circulating blood upon them is strong. Among the causes of this kind are, a ligature of the veins, their compression by any cause, a tumor for instance; intense cold; an obstructed perspiration in a phlegmon; by astringents, emplastick medicines, cold substances, repellents, or stupifying remedies, especially if acrid substances are either exhibited internally, or mixed with external applications; internal or external inflammations, wounds, contusions, luxations, and fractures, especially when the bandage is applied too tight; oleous substances of an acrid nature applied to sound parts, long lying in bed, and hernias of the confined or incarcerated kind.

423. 2d, Such things as render the fluids so acrid, as to corrode and destroy the vessels, may cause a gangrene; such as the long stagnation of a pent-up and warm humour, whence arise acrimony and corrosion; hence blood in an aneurism, pus in an abscess; water in the cranium, the thorax, the abdomen, or the scrotum; contusions, the fluids discharged in wounded parts; bad, morbid, acrid, and totally peccant humours, perpetually brought to the parts; such as lymph long flowing about tendinous parts, the ichor of a cancer, the matter of a dysentery, or dropsy; the afflux of a febrile, pestilential, variolous, or scorbutic matter to any fleshy part, especially to the gums.

424. 3d, Those things which produce a mortification of the extremities; such as the languid state of old age, great weakness, violent contusions of large nerves, of the spina dorsi, of the spinal marrow, and large nervous ganglions, will cause a gangrene (426, 321).

425. 4th, Poisons of a particular and surprising quality may produce gangrenes.

426. The

426. The signs of a future gangrene are its preceding causes, already enumerated (422, 423, 424, 425.)

427. The signs of a present gangrene are; first, a removal of the symptoms of inflammation, without any correction of the cause (compare 382, 383, 385, with 422, 423, 424, 425); secondly, a faint sensation of the part; thirdly, a pale, cineritious, dark, livid, or black colour; fourthly, such a soft and flaccid state of the part, so that it does not rise when compressed by the fingers; fifthly, pustules full of a lymphatic, yellowish, or redish ichor in the inflamed part; sixthly, when a gangrene is produced by cold, an itching, and violent sense of puncture, together with an intense redness, which is soon succeeded by a blackness, which indicates mortification.

428. A future sphacelus is known by the continual augmentation of the signs of a present gangrene (427.)

429. The signs of a present sphacelus are; first, a violent previous gangrene; secondly, a cessation of sensation and motion; so that the part, when cut, pricked, or burnt to the bone, feels nothing, but remains insensible; thirdly, a livid, dark, or black colour; fourthly, softness, flaccidity, coldness, a separability of the skin; at last, dryness and hardness; fifthly, a cadaverous stench; sixthly, a mortified, deep-seated corruption, preying on all the adjacent parts, as far as the bone.

430. The imminent and speedy danger of this disorder requires just prognostics.

431. The just prognostics are to be taken from a due consideration of the age, temperament, disorder, and strength of the patient; secondly, from the quick spreading nature of the disease; thirdly, from a knowledge of the internal or external cause; fourthly, from the season of the year; fifthly, from the part affected, according as it is more or less necessary to life; or according as it is moist, sinuous, or dry.

432. Hence

432. Hence arise the following rules,
From a gangrene arises a sphacelus.

From a sphacelus the mortification of the part,
and the sudden infection of the adjacent parts.

A gangrene is to be relieved with all expedition.

A sphacelus is to be extirpated with all expedition.

A gangrene of the brain, viscera, and bladder, is mortal, and, in acute diseases proves the cause of a sudden death, whilst the larger parts scarcely appear to be injured.

A gangrene of the internal parts of the mouth, lips, nostrils, and genitals, is not to be cured without great difficulty.

A sphacelus of the extreme and tendinous parts is mortal in old age.

In dropical, phthical, and scorbutic patients, a gangrene is so highly virulent, as to produce the death of the patient.

A sphacelus ascending to the superior parts, or producing watchings, deliriums, syncopes eructations, hiccups, spasms, pains, cold sweats, and drowsiness, preface the death of the patient.

A livid or black colour, or driness about ulcers, preface a gangrene, a sphacelus, and the death of the patient.

433. The intentions of cure in a gangrene are, first, to confirm the strength; secondly, to prevent the ingress of the putrid matter into the veins; and, thirdly, to check and remove the putrefaction formed.

434. The strength is confirmed, first, by such things as contribute to destroy the internal cause (422, 423, 424, 425) producing the gangrene, rouse the spirits, and preserve the circulation of the fluids, at the same time having due regard not only to the age, the sex, and the temperament of the patient, but also to the state of the weather. These are, therefore, to be either of the refrigerating or heating kind, according

as the particular circumstances of the patient shall require.

The following exciting spirit is to be used in a gangrene, proceeding from a hot cause, or an alkaline temperament.

Take of the fresh expressed juice of citrons two ounces; of the juice of oranges one ounce; of the recent syrup of mulberries two ounces; of water distilled from the whole citron four ounces; of baum-water two ounces; of cinnamon-water one ounce; and of Rhenish-wine six ounces; adding sugar, if there is a necessity for it: mix these together, and let the patient drink an ounce of the spirit every hour, or half hour.

Or,

Take of the robs of currants, and barberries each two ounces; of the spirit of salt half a dram; of distilled baum-water six ounces; and of Rhenish-wine ten ounces: mix these together, and let the patient drink an ounce of the mixture every hour.

If the patient labours under a gangrene, proceeding from a cold cause, or is of a phlegmatic or acid temperament, the following preparation is to be used.

Take of sal volatile oleosum three drams; of the elixir proprietatis prepared with salt of tartar two drams; of distilled aqua vitæ of *Matthioli* (in the *Leyden* Dispensatory) three ounces; of the distilled water of citron-peel six ounces; of the syrup of the five aperient roots, and of *Fernelius's* syrup of Mugwort, each one ounce; and of the confectio alkermes two drams: mix, and use like the preceding.

2dly, By

2dly, By aliments, and drink of an analeptic nature.

3dly, By epithems, as toasted bread, impregnated with medicines which resist the internal cause, excite the spirits, and preserve the circulation of the fluids (433, N. 1.) applied to the veins, or about the nostrils.

In cases proceeding from an analescent hot cause.

Take of Rhenish-wine one pint; of cinnamon, cloves, leaves of the macer and nutmeg, each two drams: boil in a tall glass-phial, placed in a sand-heat; and with the decoction impregnate the toasted bread.

In cases proceeding from an acid cold cause.

Take of sol volatile oleosum half an ounce; of the spirit of citron-peel two ounces; of the spirits of lavender and mint each an ounce; and of the spiritus theriacalis two ounces: mix all together, and immerse the toasted bread in the mixture.

435. The ingress of the putrid matter into the veins is prevented, first, by confirming the strength (434) and, consequently, increasing the motion of the peccant matter to the exterior parts; secondly, by procuring its free discharge externally: and this intention is answered by fomentations and cataplasms, prepared of diaphoretic, emollient, and laxative substances; as also by scarifications, cuppings, leeches, and external warmth.

Take of recent rue four handfuls; of mallows two handfuls; of alliaria (Jack by the hedge) one handful; and of the meal of linseed one ounce: when these are boiled in a close vessel, with a sufficient quantity of water, to four pints of the de-

decoction, add two drams of Venice-soap for a fomentation, to be applied with woolen cloths.

Or,

Take of the vinegar of elder two ounces; of elder flower-water ten ounces; of sal ammoniac two drams; and of white French-wine fix ounces: mix for a fomentation.

A cataplasm against a gangrene may be prepared in the following manner:

Take of the flowers of elder, melilot, marsh-mallows, chamomile and marigolds, each three ounces: when these are boiled in water to a cataplasm, towards the end add of the meal of linseed, one ounce; and of the oil of linseed an ounce and an half.

436. A beginning putrefaction is corrected, first, by removing its sensible causes (422, 423, 424, 425.)

437. Secondly, By correcting its proximate cause, which consists in the stagnation and heat; first, by guarding the stagnating fluids against putrefaction; secondly, by fortifying the parts against the same misfortune and thirdly, by procuring a due degree of motion to the corrected stagnant liquors, through the vessels thus fortified, and secured against putrefaction.

438. The fluids are preserved from putrefaction by applications of salt, vinegar, wine, spirits of wine, and aromatics.

The salts, the vinegars, and the aromatics, proper for these intentions, are these following:

Sal-ammoniac.

Borax,

Sal-gemmæ.

Nitre.

Sea-salt.

Regenerated salt, remaining after the distillations of spirit of sal ammoniac.

Vinegar.

Vinegar of marigolds.

Distilled vinegar.

Vinegar of garden-tarragon.

Vinegar of lavender.

Vinegar of roses.

Vinegar of rice.

Elder-vinegar.

Vinegar of squills, and the

Acetum theriacale.

Spirit of nitre,

— of salt,

— of sulphur by the bell,

— of vitriol.

} either simple, or
with three times the
quantity of alcohol.

Rhenish-wines are, in a particular manner, proper for this purpose.

The aromatics answering this intention are the following.

Southernwood.

Wormwood.

Alliaria.

Angelica.

Balsamita.

Carduus benedictus.

Lesser centaury.

Germander.

Cretan dittany.]

Herb robert.

Lavander.

Marjoram.

White harehound.

Myrtle.

Origanum.

Polium.

Pennyroyal.

Rosemary.

Rue.

Savine.

Sage.

Water-germander.

Tansy.

Thuya.

Take of the leaves of rue, water-germander, and wormwood, each four ounces ; and of mint one ounce : boil in a close vessel, with a sufficient quantity of water and vinegar ; and to every four pints

pints of the decoction, add of sal-gemmæ four drams, and of the spiritus vini theriacalis two ounces, for a fomentation.

Or for a cataplasim.

Take the same ingredients, boil up to the consistence of a cataplasim, adding towards the end of sal-ammoniac four drams; of the meal of linseed two ounces, and of the oil of rue, by infusion, an ounce and an half; make into a cataplasim, at the time of use, to be sprinkled with a little of the spiritus vini theriacalis, or camphorated spirit of wine.

439. By the same medicines (438) the solids are preserved sound, and free from putrefaction.

440. The stagnant fluids are put in motion, first, by diluting them with aqueous liquors copiously drank, and applied; secondly, by stimulating the arteries by such medicines as are opposite to the disorder; thirdly, by putting the fluids in motion, by means of heat, friction, and cardiac medicines; and, lastly, by removing the redundance of the blood, which distends the vessels too much, by venesection.

441. By these medicines, (434, 435, 436, 437, 438, 439, 440) soon applied, a beginning gangrene is often happily corrected, and successfully removed by a diaphoresis.

442. But, if the fluids are already putrefied, their most moveable parts exhaled, and the vessels destroyed, the disorder will not yield to these remedies, nor will soundness be restored to the corrupted part; but the adjacent vessels will be much destroyed by the moved humours, whilst, at the same time, the live parts are not capable of exhaling.

443. In this case (442), therefore, the whole intention is, to separate the mortify'd from the live parts.

444. This separation is always produced by the force of the vital fluid, flowing to the boundaries of

the gangrenous eschar, suffocated there, and forced into a suppuration, (387); by which means the fibres, connecting the gangrenous to the sound parts, will be divided.

445. It is therefore obvious, that the method of treating a gangrene must consist, first, in taking the measures already directed, (433, 434, 435, 436, 437, 438, 439, 440); secondly, in hastening the suppuration; and, thirdly, in softening the eschar.

446. In order to accelerate a suppuration, a scarification of the putrefied part, to the very beginnings of the live parts, is conducive; for, by this means, the too great suffocation being diminished, an abscess is formed, instead of a spreading gangrene; by which the skin, and gangrenous fat, are, for the most part, separated from the subjacent live parts.

447. But, that the more blood may be conveyed into these boundaries, leeches, cupping-glasses, and other remedies of an attracting nature, often applied, are of service.

448. The part in which the incisions (446) are made, is to be fomented with warm liquors, proper for resisting putrefaction (438), and the eschar is to be diminished by emollients (403).

The liquor above-mentioned, proper for resisting putrefaction in a gangrene, is thus prepared:

Take of the vinegar of garden-tarragon six ounces; of the vinegar of roses two ounces; of the spiritus vini theriacalis four ounces; of sea-salt one ounce; and of a decoction of scordium twelve ounces: mix all together.

The cataplasm, for softening gangrenous parts, is thus prepared.

Take of the leaves of scordium two handfuls; of mallow-leaves one handful; of the flowers of lavender, and marsh-mallows, each one ounce: boil these

these to a cataplasm with vinegar; and then add of the meal of linseed three ounces; of the oil of linseed one ounce; and of sal ammoniac one dram.

The *unguentum aureum*, and *basilicon*, are in this case also recommended.

449. The pendulous, mortified, disengaged, and softened parts of a gangrenous eschar, are to be removed by the forceps or scissars.

450. Warm cataplasms, which act by a continual and uninterrupted heat, and which consist of emollient, diaphoretic, and anodyne substances are to be kept continually applied to the whole part affected.

A cataplasm for these intentions may be prepared in the following manner;

Take of the recent leaves of male-southernwood, of pontic-wormwood, of garden-rue, scordium, alliaria, (jack by the hedge) hemp-agrimony, white-hore-hound, and tobacco, of each half an handful; of henbane one handful; of the flowers of marigolds, the lesser-centaury, melilot, feverfew, and tansey, each two ounces; of the flowers of marsh-mallows, and wild poppy, each one ounce. When these are boiled with water, in a close vessel, for a quarter of an hour, mix with them, of the meal of linseed four ounces; of the oil of rue by infusion two ounces; of the acetum theriacale, and the spiritus vini theriacalis, each one ounce; and of sal ammoniac one dram.

451. The cure is also much promoted by a less frequent inspection of the part than is usually practised.

452. When, after these measures (446, 447, 448, 449, 450, 451), are taken, the eschar begins to be contracted, the scarified parts to become moist, the sound margins to grow tumid, red, and to suppurate, and the mortified part to move up and down, it is

^a sign, that the separation is carrying on, that the spreading disorder is stopt, and that the part will soon become pure and free from the gangrenous taint.

453. Then lenitive, anodyne, ballamic, and digestive substances, are to be applied; the ulcer is to be dressed; all medicines, which render the fibres rigid, are to be avoided. The part is to be kept in a state of rest; and the disorder, in other respects, is to be treated like an ulcer (411.)

454. When a gangrene arises from an intense cold, (427, N. 6.) the part affected is to be covered, either with snow, or with linen-cloths soaked in cold water, till the spicula of the cold being absorb'd by the snow, or the cold water, the part begins to be thawed, and its life to return.

455. In cases of this nature, the part becomes putrid by the application of heat; because the spicula of cold are put in motion, without being reduced to a due degree of fluidity.

456. After these measures (454) are taken, the patient is to have his strength recruited by medicines of a hot quality; and a heat so intense as to produce a sweat is to be excited.

A sudorific, proper in a gangrene, may be thus prepared;

Take of distilled treacle-water one ounce; of the prophylactic water of *Sylvius* six drams; of the aqua-vitæ of *Matthiolus* one ounce, of rue-water nine ounces; of *Fernelius's* syrup of mugwort, and of the syrup of the five aperient roots, each an ounce and an half; and of elixir proprietatis, prepared with salt of tartar, two drams: mix all together, let the patient take a spoonful every half quarter of an hour, drinking after an ounce or two of the following mixture:

Take of barley-water two pints; of French-wine one pint; of powdered ginger two drams; and

of

of the syrup of Jerufalem-oak three ounces: mix all together.

SPHACELUS.

457. **I**F a gangrene degeneraets into a sphacelus, the part infected must be removed.

458. The method of doing this is to be varied, according as the part is totally, or only partially affected, and according to the situation of the part, which sometimes does not admit of amputation, as the buttocs, os] sacrum, os coccygis, the prominent spines of the vertebræ, and eminences of the scapulæ.

459. If therefore, the part is not corrupted to the very bottom, or cannot be extirpated, our endeavours must tend, first, to stop the progress of the sphacelus; and, secondly, to remove the sphacelated portion.

460. The progress is stopt by intercepting the communication betwixt the live and sphacelated parts.

461. A stop is put to the propagation of this disorder, by placing a pretty deep boundary between the sound and disordered part, either by incision, the actual cautery, or corrosion.

462. The infected part is separated, if, after the progress of the disorder is stopt, (461), or whilst it is a stopping, the whole part is cauterized, or cut to the sound subjacent parts, and then corroded by the application of a warm acrid lixivium, till it is consumed to the live parts, till eschars are formed, which are carefully to be softened (403), and removed: but the live parts must, at the same time, be avoided with the greatest caution.

The corrosive lixivium, recommended by *Boerhaave*, for procuring the separation of a sphacelus, is thus prepared:

Take of quick-lime, made of calcined stones, one part: cover it carefully up with three parts of pot-ash; and when they are dissolved in a subter-

rancous place, filtrate and keep the preparation for use. Quick-lime itself, reduced to a fine powder, may also be sprinkled on the part.

463. When the signs of soundness and life return, the disorder is to be treated like an ulcer, or a wound.

464. But if a limb sphacelated to the bone, can be removed without putting an end to the patient's life, it is to be amputated together with the bone, which, when deprived of its integuments, cannot be nourished by vessels, nor hindered from mortifying.

465. In fingers and toes, in the metacarpus or metatarsus, amputation is performed by a chisel and mallet.

466. But in larger bones, such as those of the thigh, leg, humerus, or arm, a more laborious operation is requisite, as will be obvious from what follows.

467. The proper place, for performing the operation, is to be determined by the following considerations.

First, The sound parts are carefully to be preserved.

Secondly, The corrupted parts are carefully to be removed.

Thirdly, The most commodious use of the remaining part is to be procured.

468. In all amputations, the operation ought to be performed in the sound parts, near such as are corrupted; for the reasons given in (467, N. 1, 2.) but in the amputation of a leg, the operation ought always to be performed under the knee, for the reasons given in (467, N. 3.)

469. In order to understand the operation of amputation, and its happy success, we must advert, first, to the preparation for it; secondly, to the operation itself; thirdly, to the cure of the symptoms; fourthly, to the consolidation and, fifthly; to a supply of the lost substance.

The preparation is made, first, by a compression of the large sanguiferous arterial vessels, by the application

cation of pyramidal compresses, secured with a sufficient ligature on the sound part, near that which is affected; secondly, by a strong and equable compression made a little above the affected part, by means of a fibulated ligature of leather, furnished with chords, for making the compression; thirdly, by carefully securing the patient, and the part to be amputated; fourthly, by a moderate inflexion of the part, that the operation may not be performed, when it is too much extended; and, fifthly, by the exhibition of a cardiac narcotic to the patient thus:

Take of the distilled oil of cinnamon two drops; of the distilled oil of cloves one drop; of the distilled oil of citron-peel two drops; and of the best sugar two drams: make into an elæosaccharum, with which mix of red coral one dram, and of pure laudanum two grains; reduce to a powder, to be divided into two doses, one of which is to be exhibited an hour before the operation; and if it has produced no effect, the other is to be given a quarter of an hour before it.

470. The operation is performed in the part prepared as in (469).

1st, With a sharp, strong, well tempered incurvated knife, whose back is obtuse, strongly, equably and forcibly passed all around through the integuments to the very bone, that thus, by one quick and instantaneous incision, the whole periosteum may be accurately divided.

2dly, If there are two bones in the part to be amputated, and the interstice between them small, by accurately dividing the periosteum, which the large knife could not reach, with a sharp knife of a small size.

3dly, By strongly retracting the divided parts, (mentioned in 1, 2 of this paragraph) by means of

assistants that the margins of the incision may be at a due distance from each other.

4thly, By cutting the bone with a sharp, slender, strong and tense saw, which is to be applied with a perpendicular, strong, and equable motion, beginning where there are two bones, with the smaller, and ending with the larger, lest the weaker should be shattered or broken by the action of the saw.

5thly, By assistants artfully bending the bones during the operation, that the action of the saw may be the more free and easy.

471. An hemorrhage, the first symptom succeeding an amputation is always to be forthwith stopt.

1st, By drawing out the vessels, which discover themselves by a discharge of blood, with a spring-forceps, and passing a thread through them, and tying it tight about their mouths, if they are large vessels, or by constricting the vessel, by means of a thread fixed on two incurvated needles, passed through the muscles on both sides of the vessel.

2dly, By the application of actual cauteries.

3dly, By pledgets covered with vitriol applied to the vessels, and by absorbents applied to the other parts.

4thly, By relaxing and returning the live retracted parts mentioned in (469, N. 2.)

5thly, By putting the stump into a bladder, full of some astringent powder : thus,

Take of dragons-blood one dram ; of gum-sarcocol two drams ; of blood-stone half a dram ; and of armenian-bole eight drams: reduce to a fine powder.

Or,

Take of the volatile meal, gathered in mills or bake-houses four ounces ; of colothar of vitriol strongly calcined and edulcorated, half a dram : mix exactly.

Or,

Or,

Take the powder of the lycoperdon, and sprinkle it on the wound, and then apply the interior surface of a new opened lycoperdon to it.

6thly, By procuring sleep, rest, and a proper regimen.

472. A consolidation in the bone is obtained by procuring a speedy exfoliation, and preventing a caries, which is done, by forthwith applying to it a small comprefs dipt in spirit of wine impregnated with mastich.

473. A consolidation is obtained in the flesh, by the means directed in the chapter concerning wounds, (from 189, 192, to 210.)

474. If a patient deprived of a large limb (466, to 471), has his viscera, subservient to chylication and sanguification, sound, the effects of a plethora (in 106) generally succeed, and, that the cause of these effects may be removed, a moderate regimen is to be used, and venesection repeated as the exigency of the patient requires.

475. The place of the lost limb is to be supplied by an artificial imitation of it by machines prepared for that purpose. See *Aquapendens*, *Hildanus*, *Salingen*, and *Pare*.

BURNS.

476. **I**F actual fire, or fire latent in any ignited substance, is applied to the human body, there are produced a destruction of the vessels, and an extravasation of the humours proportioned to the variety of the cause, the duration of its action, and the nature of the part affected.

477. The various degrees of burns (mentioned in 476) resemble the several phenomena, which happen from the first and slightest inflammation (from 370, to 464) to the most terrible sphacelus.

478. Hence

478. Hence the phænomena, diagnostics and prognostics of burns, are the same with those of an inflammation.

479. Neither is the cure of the one different from that of the other, and antiphlogistic liquors are always to be used for drink.

480. A burn attended with a degree of inflammation, which admits of a resolution (386), is to be cured by such things as correct and move the fluids, clear and preserve the vessels. These ends are obtained by moderate heat, fomentations, cataplasms (395, to 402), and by well washed butter.

A proper fomentation may be thus prepared :

Take of the vinegar of litharge two ounces ; of French-wine twelve ounces ; and of the distilled water of elder-flowers fourteen ounces : mix all together.

Or,

Take of the flowers of elder, melilot, and marsh-mallows, each one ounce : boil in water, and, with one pint and an half of the expressed liquor, mix of the spiritus vini theriacalis two ounces ; of the vinegar of elder one ounce ; and of sea-salt one dram, apply with warm linen-cloths.

A cataplasm may be thus prepared.

Take of the leaves of mallows, and marsh-mallows, each two handfuls ; and of the flowers of melilot two ounces : boil in water, and towards the end add of linseed-meal a sufficient quantity ; of the spiritus vini theriacalis one ounce ; and of linseed-oil half an ounce : make into a cataplasm.

481. A burn about to degenerate into a gangrene, when the skin is already corrugated and corroded, and
small

small blisters raised, is to be cured in the same manner with such an inflammation, by fomentations, cataplasms, emollient and digestive medicines (402, to 454.)

482. A burn, already formed into gangrenous or sphacelated crusts, is to be cured in the same manner with a gangrene or a sphacelus (419, to 476.)

483. In no case is the seemliness of a cicatrix to be more carefully procured than in burns. See (217.)

Of a SCIRRHUS.

484. **A** Scirrhus (392) may be produced by whatever is capable of coagulating, inspissating, or drying the liquids in the glands. The seat therefore of a scirrhus may be any of the glands, but especially such as contain an easily inspissated liquor, or from their situation dispose their contents to a stagnation. Hence a scirrhus frequently happens in the eyes, nostrils, the mouth, the breasts, the axillæ, the groin, the pancreas, the mesentery, and the uterus.

Hence a scirrhus may be produced by an inflammation (392), by stagnant, caseous, indurated, or coagulated milk; by a contusion (322); by strong attrition; by carbuncles; by buboes; by ulcers too speedily closed; by the atrabiliarious matter of the blood or bile, especially when the menses or hæmorrhoids are obstructed; by a lapidescent, gross, austere and plaister-like matter; by a melancholy life; by hard living; and by an hereditary disposition.

486. The effects of a scirrhus formed are, by its increased bulk, to affect the adjacent parts, to press upon them, and compress them, to injure the peculiar functions of the scirrhus and adjacent parts, and by these means to produce inflammations, suppurations, gangrenes, palseys, atrophy, a sphacelus, sterility, difficult labours, the iliac passion, and many other disorders of the like nature; which may be easily deduced

duced from the nature and office of the injured and compressing part.

487. A scirrhus is known to be present from a knowledge of its causes (484, 485), effects (486), and symptoms (392), together with an acquaintance with the part affected (484), and the temperament of the patient.

488. From the circumstances, enumerated in the preceding paragraph (487), the termination of a scirrhus may be prognosticated, considering at the same time the duration and effects of the disorder; (486); and a scirrhus, which is, of its own nature, benign, by an increased circulation of the humours, acquires a malignant quality.

489. As this accelerated motion of the fluids often cannot be avoided, a scirrhus lays a foundation for constant dread and terror.

490. Hence the physician is to observe;

1st, That the cure of a scirrhus, which is recent, benign, situated in a proper place, not perfectly hard, and afflicting a person whose juices are laudable, is to be attempted by emollient and resolvent medicines, the most considerable of which are acid fumes and mercury duly used.

Take of the flowers of marsh-mallows, chamomile, melilot, and elder, each one handful; of the lesser centaury half an handful; of the leaves of wormwood, white hore-hound, rue, and savin, each one handful; of white briony-root four ounces; and of garden-angelica one ounce: boil in water in a close vessel, and, straining the liquor through a cloth, with every four pints of it mix four ounces of the spiritus vini theriacalis: apply to the naked skin in woollen cloths, laying over them a sow's bladder anointed with a little oil.

Of the above-mentioned ingredients boil a proper quantity in as much water as is sufficient for making a cataplasm, adding towards the end of gum-galbanum, subdued in the yolk of an egg, three ounces; of linseed-meal two ounces; and of linseed-oil three ounces.

A plaister for a schirrhus is prepared in the following manner.

Take of gum-ammoniac, galbanum, sagapenum, opoponax, each two ounces: melt all together in an earthen vessel over a gentle fire and depurate; then mix intimately with the whole, four well-beaten yolks of eggs; of yellow wax two ounces; of the meal of white briony-root three ounces; and of the oil of rue by infusion a sufficient quantity.

2d, If the schirrhus does not yield to these medicines; if its place, situation, adjacent parts, mobility, the state of the disorder, the strength and condition of the patient permit, it is with all expedition to be totally extirpated with the knife.

3d, If a schirrus is old, or known to be malignant, from its colour, hardness, roughness, itching, and beginning pain; if a bad event is to be dreaded from the part affected, or those adjacent; if the schirrhus adheres to any parts; if it happens in a cacochymical person, or cannot possibly be extirpated: then all those things are to be avoided which increase the motion of the fluids, lest the schirrhus should become a cancer: hence medicines of an emollient, suppurating, corrosive, caustic, and dissipating nature, are bad.

4th, But the most proper medicines, under this disorder (490, 493) are anodynes; such substances as allay the motion of the humours; preparations of lead, and mild preparations of mercury.

Take

Take of white poppy-seeds bruised two ounces; of the roots of fennel four ounces; of wild poppy-flowers six drams; of the flowers of mallows one handful: boil in water in a close vessel for a quarter of an hour; and with each two pints mix two ounces and an half of the syrup of white poppies: of this preparation let the patient now and then drink three or four ounces.

Take of sperma ceti, prepared red coral, and unwashed diaphoretic antimony, each one dram; and of pure laudanum two grains: reduce to a fine powder to be divided into four equal doses, of which the patient is to take one every morning and evening.

External medicines are also of use, and an excellent fomentation may be prepared in the following manner:

Take of the flowers of henbane, melilot, red poppy and elder each one pugil: boil with water in a close vessel, and with each pint and an half of the liquor, mix of the vinegars of elder and roses each two ounces; and of the rectified spirit of wine four drams.

Take of the vinegar of litharge one ounce; of the expressed oil of henbane-seeds, of the expressed oil of white poppies, and of the oil of roses by infusion, each two drams: make into an ointment, adding towards the end six grains of pure opium.

For plaisters we may use the red-lead plaister, and the unguentum diapompholygos.

Or,

Take of the expressed, pure, and recent juices of the leaves of henbane, garden-poppy, and philandrium

landrium each four ounces: boil over a gentle fire; inspissate, and towards the end mix eight ounces of white wax, and one ounce of the oil of roses by infusion: make into a plaister.

Or,

Take of the sugar of lead, ceruss, an amalgama of mercury and lead each two drams; of white wax four ounces; and of the oil of roses by infusion three drams: make into a plaister.

491. If at the same time the temperament of the patient is peccant, that is above all other things to be corrected.

C A N C E R.

492. **I**N a scirrhus (392), if the stagnating matter, which forms it, being increased by its duration, begins to move; or if the humours in the adjacent parts are moved in such a manner, as to inflame the vessels situated on its margin, it becomes malignant, and is then called a cancer, or carcinoma.

493. In a cancer (492), the degree of the neighbouring inflammation, the excess of putrid acrimony in the part affected, the importance of the part, the number and condition of the glands connected with it, and the whole constitution, determines the degrees of malignity in the first state.

494. If a cancer is confined within its own membrane, it is called an occult cancer; but if these are broken and ulcerated, it is called a manifest, or ulcerated cancer; the last being the consequence of the first.

495. The cause of a cancer is, whatever is capable of forming a scirrhus (484, 485), an acrimony of any kind introduced into a scirrhus; a change induced in the circulation of the blood, from a retention of the menstrual flux, the hæmorrhoids, or any habitual hæmorrhage; sterility, celibacy, the age in which wo-

men

men cease to be prolific, generally from forty five to fifty; an austere, acrid, and hot diet; melancholy and bilious affections of the mind; any external irritation, whether by motion, heat or acrimony, or by emollient, suppurating, caustic, or vesicating applications; or internal remedies producing the same effects.

496. The parts subject to a cancer are the same as those affected by a scirrhus (484).

497. An occult cancer is known to be formed, when, after the signs of a preceding scirrhus (487), a titillation, itching, heat, redness, a lancinating, burning, pungent pain are perceived; when the colour of the part becomes redish, red, purple, bluish, livid, or black; when it feels considerably hard, ragged and rough, with a rising apex; when the tumour increases, and when the adjacent blood-vessels become tumid, knotted, varicose, thick and black.

498. An ulcerated cancer is distinguished by the opening of a preceding occult cancer (497), for then the skin is laid bare by a kind of excoriation, and a thin acrid ichor, as it were transudes through it.

499. The progress of a cancer is thus: the sound vessels about the edges of the hard cancer, being weakened by the perpetual attrition of the circulating fluids, and distended by the neighbourhood of the tumor, at last break; hence a putrefaction, and thence a subtile, acrid, fetid, cadaverous sanies, which corrodes the circumambient parts, preys upon those which are near it, and makes a progress all around; whilst it propagates its malignant roots, every way deep into the adjacent parts, to which it adheres strongly. The lips then become swelled, retorrid, and dismal, an intolerable burning, pungent corroding pain is perceived; the colour becomes chimeritious, livid, or black; occult cancers appear in the glands, which communicate with the part affected; the next stage is attended with hæmorrhages, convulsion, a slow fever, extenuation of the whole body, a loss of the sense of smelling

Smelling, callous tubercles in the ears unattended with pain, faintings, and lastly, death, in consequence of the corrosion and consumption brought on by the disease.

500. An occult cancer, in a body of a good habit, may be sometimes endured without great inconvenience; but if once moved in the manner above described (499), it will infallibly cause a great deal of pain and trouble.

105. A beginning cancer, if small, moveable, situated in a proper place, not adhering to any considerable vessels, proceeding from an external cause, in a young and otherwise sound body, and being the only one in the whole body, is immediately to be extirpated by the actual cautery, or cut out.

502. Emollient, emplastick, suppurating, acrid, ex-coriating, vesicating, and caustic applications, convert an occult into an ulcerated cancer: all these are, therefore, to be avoided.

503. A cancer which is large, of long standing, adherent, situated in any part inconvenient for extirpation, growing to or lying upon any considerably large vessels, proceeding from an internal cause, in a body which is old, of a bad habit, and disposed to cancerous disorders, and which is accompanied with cancers in other parts, must neither be touched with the knife (501) nor any of the topical medicines above-mentioned (502).

504. Unless a cancer can be entirely extirpated, together with its roots and seeds, any attempt to take it off by incision will exasperate it, make it recur to the inward parts, and there generate others, or increase those already produced.

505. The cause of a cancer must be removed, together with the cancer, or rather before it.

And, unless a cancer can be intirely taken away, it must be left.

A cancer in the uterus, fauces, palate, armpits, or groin, is incurable. A cancer in the lips is not cured without difficulty.

506. In case, therefore, of a cancer (503) which cannot prudently be extirpated, all that can be done is,

First, To keep it quiet.

Secondly, To moderate the symptoms.

507. Such a cancer is kept quiet,

First, By defending the part from all external injuries by applications, wherein lead and narcotics are ingredients.

Secondly, By diminishing, correcting, or averting the known cause, which is done by lenient purges of mild vegetables, and mercurials, exhibited in small and frequent doses.

In a cancer the following preparations are beneficial.

Take of resin of jalap six grains; diagrydium seven grains; unwashed diaphoretic antimony twenty-four grains: make up into a powder.

Take of mercurius dulcis fifteen grains; of diagrydium twelve grains: make into a powder, to be taken once a week.

Thirdly, By diluting, mildly aperient, and subalcalescent internals.

The Remedies of this kind are,

Decoctions of Burdock.

China-root.

Fennel.

Parsley.

Sarsaparilla, and

Vipers-grass.

Or,

Take of unwashed diaphoretic antimony eight grains; sperma-ceti one dram: mix up into a powder,

powder, to be divided into two doses, one of which is to be taken in the morning, and the other at night.

Fourthly, by avoiding whatever may act as a cause, whether taken internally, or applied externally.

508. The symptoms are moderated by the same means (507) by which the cancer is kept quiet, except that opiates are required in case of pain.

509. An exulcerated cancer (498, 499), which will not admit of extirpation, may frequently be mitigated, by keeping it clean, by applying to it extremely mild preparations of lead, and by the methods (507, 508, above specified.) Thus,

Take of the distilled waters of red poppies, roses, and elder each two ounces; of the sugar of lead one dram; of the tincture of opium one dram; and of the spiritus vini theriacalis two drams: mix all together.

Or,

Take of the vinegar of litharge six drams; and of the oil of roses four drams: make into an ointment.

510. Before the amputation of a cancer is performed, first, the body must be prepared by a proper diet, and medicines which are strengthening, and opposite to the cause of the cancer; secondly, the whole of the cancer together with its roots, is, after passing a thread through, or a small fork for that purpose, to be elevated and cut out all at once; or when by an incision in the integuments, the cancer is laid bare, it is, by a thread passed through it, to be drawn upwards, and prudently separated from the sound parts; and, thirdly, by curing the wound by a mild but seldom renewal of proper dressings, after having carefully evacuated the blood from the adjacent parts.

511. After the extirpation of a cancer by amputation, (510) the patient must persist, for a long time, in the use of the diet and medicines which are proper in a present cancer.

Disorders of the BONES.

512. **T**HE bones are subject to the like disorders with those incident to the softer parts of the human body.

513. For the interstices of the bones are lined with a slender membrane furnished with the same kind of vessels, and continually moistened by the same liquors, as moisten the softer parts.

514. The greater the interstices (513) between the laminæ of the bones are, the more, in these particular parts, the bones approach to the nature of the soft and muscular parts.

515. For this reason, such parts of the bones (514) are most subject to the disorders incident to the soft parts.

516. Of this kind are the broader parts of the bones near the joints; whereas they are more compact, and less vascular, in the middle; or part equidistant from their extremities.

517. Hence (514, 515, 516) arises the primary distinction between the Diseases incident to the bones.

518. The bones, besides the vessels common (513) to the softer parts, have, also, in their larger cellulæ (516) vesicles full of a subtile medullary oil, there secreted and accumulated for certain purposes: these vesicles, which about the joints are pretty large, are about the middle of the bone gradually destroyed, and almost vanish into small ducts, which contain a pinguious substance.

519. Hence (518) arises another class, or order of diseases, incident to the bones.

520. The bones have an external periosteum, which not only surrounds and covers their convex part, but
also,

also, conveys the arterial vessels into their cellulæ and marrow, and receives an incredible number of venous vessels, both large and small.

521. Hence (520) arises a third series or class of disorders incident to the bones.

522. The bones have an internal periosteum, which lines and covers the cavities containing the marrow, distributes the arterial vessels to the medullary vesicles, and receives an incredible number of venous vessels, both large and small.

523. Hence (522) arises a fourth division of disorders incident to the bones.

524. The bones have in their cavities an infinite number of vesicles, filled with a subtile medullary oil, which they keep to distribute not only among each other, but, also, between the interslices of the bony laminæ, the cavities of the joints, and this through strait pores. These vesicles are furnished with arteries, veins, lymphaducts, adipose ducts, small nerves, and slender membranes.

525. Hence (524) arises the fifth and last class, or division, of the disorders incident to the bones.

526. If the medullary oil (518, 524) stagnates in its proper vesicles, emunctories, or in the interstices of the bones, and, by the vital heat and motion, becomes acrimonious, putrid, and sanious; it will prevent a new secretion, obstruct the vessels which convey the humours to the part, and those which secrete them, and inflame its proper vesicles: then it will produce a suppuration, or by a gangrenous putrefaction, corrupt the fluids and solids. Hence the substance of the bone, not only destitute of vessels, and vital fluids, but also corroded by acrid humours, is changed into a kind of cineritious calx, where it is most thin and slender, that is, in the cellulæ of the apophyses. By this means violent pain, heat, pulsation, tumor, abscesses, and caries, are produced. Such a stagnation may arise from every obstruction; (see

chap. of obstructions) but, if it arises from an internal cause, then the disorder is called *spina ventosa*.

527. It is obvious, that the signs of this disorder, when at its height, (526) are the same with those of a deep inflammation, which is not exasperated by the external touch.

528. A difficult separation, absterfion, and cleansing of the part, prognosticate many misfortunes, and a difficult cure.

529. The cure of this disorder is most commodiously attempted, first, by filling all the vessels with such decoctions as are not only of an highly penetrating and abstergent nature, but, also, resist putrefaction;

Take of green and weighty guaiacum-wood rasped ten ounces; and of the salt of tartar one dram; after these are digested in six pints of water for twenty-four hours, then boil for two hours in a vessel placed within another, (in *diplomate*) adding towards the end, four ounces of rectified spirit of wine: then let them boil a little, and keep for use; and upon the residuum of the decoction pour three pints of fresh water, and let them boil for four hours.

Of the former decoction, let the patient take four ounces, four times a day; in the morning at seven o'clock, then at eleven, then at four in the afternoon, and lastly, at seven in the evening.

Secondly, by moving all the humours strongly, and soliciting a discharge of sweat, by means of warm vapours, properly applied to the body; and thirdly, at the time the sweat is flowing, by determining the motion of the humours to the part affected, by means of fomentations, and warm vapours applied to it in particular.

The weaker, or second decoction, he may use for common drink.

Decoctions of the woods of juniper, sassafras, box, and oak, may be prepared in the same manner.

The fomentations are to be linen cloths soaked in these decoctions.

530. This method (529), if persisted in for a considerable time, often produces happy effects, especially when used in conjunction with a diet of an attenuating nature, and such as resists an oleous putrefaction.

531. If the arterial, venous, or lymphatic (513, 516, 520, 522) vessels are obstructed, either from a defect of fresh fluids, or a stagnation of those conveyed to them; similar disorders are produced in these parts, the order being only inverted and changed. (526.)

532. The diagnostics, therefore, prognostics and cure, of these two species of disorders are the same. (529, 530.)

533. Hence it is also obvious, that there is great danger according to the different parts, (518, 520, 522, 524), in which the cause of the disorder is lodged; and these things premised render the diseases of the bones better understood.

534. 1st, A slight inflammation of the bone is produced by an inflammation of the external periosteum; the causes of which are very numerous, as is obvious from what is said (in treating of inflammations): and its effects are sufficiently known.

2d, Such an inflammation is known by the symptoms common to a profound or deep inflammation; the pain of which is increased by being pressed.

3d, Many terrible symptoms (531, 526) are to be expected, unless this disorder is speedily cured.

4th, This disorder is cured like other inflammations, making it, at the same time, the principal intention, to carry the peccant matter from the bone outwards, which end is obtained by fomentations, and sometimes by incisions.

535. That such an inflammation is tending to an abscess is known, first, by the manifest signs of a previous inflammation (534, N. 2.) secondly, by the pulsation, fever, and irregular horripulation, and, thirdly, by an absence of the signs of resolution. (386.)

536. But that an abscess is actually present, may be known from the signs of a deep lodged suppuration (387. 405).

537. Then the pus corroding the periosteum, will soon lay the bone bare, deprive it of vessels, and corrupt it soon (531) compare with (406).

538. For this reason the abscess is to be forthwith opened, the pus eliminated, and the ulcer cleansed (403, 404). Then the bone is to be treated in the manner directed, under the wounds of the head when the cranium is denuded, or laid bare (252, 353, 259, 260, 262, 266).

539. That such an inflammation (534), is tending to a gangrene of the part, is known, first, from the signs of the highest inflammation (388, 422), secondly; from a freedom from pain in the part affected, without a sufficient cause; and thirdly, from a dense slow increasing, and not very painful, tumour of the incumbent parts.

540. That a gangrene is present, may be known, not only from the signs enumerated in the preceeding paragraph (539), but also, from the pale, cineritious, and livid colour of the incumbent parts.

541. Then the bone, being laid bare, and deprived of vessels, and vital juices, is by the acrid, putrid, and gangrenous matter consumed, and rendered carious (526), and the contagion is quickly spread to the adjacent parts.

542. For this reason an incision is forthwith to be made, in the part affected, to the bone; and the wound is to be cleansed, and the bone cured in the manner directed (248, 249, 252, 258, 259, 260, 261, 262, 266).

543. An inflammation of the internal periosteum (522), proceeds from the same causes (534), produces the same effects, with respect to the interior part of the bone, and terminates like an inflammation of the external periosteum, either in an abscess, or a gangrene (535, 539), but is worse by reason of a want of exhalation. Hence the whole marrow, and then the whole bone, are destroy'd by an highly fetid putrefaction and caries.

544. Hence it is also obvious, that whether this membrane (522) is itself, first inflamed, or afterwards injured, by a contagion communicated from the marrow before corrupted, the same disorder, that is, a caries of the bone, will soon be produced to such a degree, as hardly ever to admit of a cure.

545. This disorder, whilst in a state of inflammation, may be known; first, from the general signs of an inflammation (382); secondly, from the depth of the part affected; thirdly, from an obtuse, fixed, and continual pain, which yields to no medicines, and is not increased by pressure; and fourthly, from the increase of such a pain after muscular motion.

546. This disorder is cured, first, by the general method used in inflammations (from 395, to 401); and secondly, by the method already proposed (529), strictly and duly observed, as soon as the signs (386), of a beginning resolution appear.

547. But if a suppuration, or gangrene should happen in this part, and be known, not only by the palpable signs (545), of a previous inflammation; but also, by the deep-seated, fixed, and obtuse pain; then the method by decoctions (529), is the only thing capable of producing a cure.

548. For then the internal part of the bone becoming putrefied, tumefied, inflamed, and carious in all its substance, the external periosteum is inflamed, distended by the tumour of the bone, and corroded by the acrid matter; and the incumbent parts, being corrupted by the slow spreading contagion, become spon-

gious,

gious, tumid, and painful, till the whole member is at last destroyed. In such a situation, extirpation is the only method of relief.

549. A venereal or scorbutic quality of the humours, or their tendency to that disorder called the rickets, are frequently the causes of this disorder. Hence we may understand what guinmata, tophs, nodes, exostoses, abscesses, a caries, and a spina ventosa of the bones are.

550. Hence we know, why a carious bone so variously changes its colours, from a whitish blue, to a pinguious white, a yellow, a cineritious, a livid, and a black colour; and what degree of corruption, each of these colours denotes.

551. From what has been said, it is obvious, why a carious bone is unequal, rough, spongy, friable, soft, and easily broken; for the external and internal arteries no longer compress the laminae of the bone.

552. Hence also the reason is plain, why from such a bone an highly fetid smell, like that of rancid bacon, is exhaled.

553. From what has been said, we also understand, why in an ulcerous part, by means of a subjacent caries of the bone, the superincumbent flesh is soft, flaccid, fungous, inflated, and tumid, and the lips of the ulcer inverted; the sanies clear, subtile, hardly at all glutinous, fetid, and full of small black scales; as also, why the disorder returns, without any apparent cause; and the ulcer proves obstinate against the best medicines for other ulcers.

554. From what has been said, we also, understand, why a caries of the bone, arising from an external cause, is most easily cured: why that arising from an internal cause is not to be cured without difficulty: why a caries arising from a lues venerea, is still more difficult to be cured: and why that arising from a spina ventosa is, of all others, the most difficult to be cured.

555. From what has been said, we also, understand, why, in the solid parts of the bones, a caries is bad; in their spongy parts, worse; and in their joints, worst of all; the first of these flow, the second quickly spreading, and the third still more so: why in children, a caries spreads quickly, and is with difficulty cured; and why a spina ventosa generally affects a considerable number of places, either at one and the same time, or successively.

556. If to what has been said (from 512 to 556), we add the doctrine of contusions (249, 250, 251, 254, 256, 257, 325), luxations (from 358 to 370), and fractures (from 339 to 358) of the bones, as also wounds of the head, which injure the bone (from 249, to 297), we shall have both the history and cure of the principal diseases of the bones; especially if to these we add an ankylosis, which is an immobility of the joint, attended with an hard tumor, and principally produced by a callus of a bone, fractured at the articulation, an inspissation of the mucilage of the joints, mentioned by *Clopton Havers*, a rigidity of the ligaments, and an exostosis of the joints. The cure of this disorder, which is highly difficult, is to be adapted to the diversity of causes, from which it proceeds.

557. He who so understands the diseases of the bones, as to comprehend their causes, natures, effects, and cure; who applies them all to the internal and concealed parts of the body; who compares them with the action of all the parts; and who runs the parallel between them and the phenomena of internal diseases, will perceive that internal greatly agree with external disorders; that those of the external kind belonging to the province of the surgeon, are to be first treated of, and that every other doctrine or method is false and inconsistent with the judicious practice of medicine.

F E V E R S.

558. **A** Fever is a very frequent disorder, an inseparable attendant upon an inflammation, the cause not only of many diseases and death, but also frequently of an happy and successful cure.

559. As the nature of this disorder, is of an highly latent and concealed kind, so we ought the more carefully to guard against mistakes and errors in investigating it.

560. But, in a research of this kind, errors are easily fallen into, in consequence of the large train of symptoms, with which this disorder is generally attended, and without which, however, there may still be a fever.

561. That such errors may be avoided, it is necessary, from among numberless symptoms (560), to select those phenomena alone, which always accompany every fever; from the presence of which physicians know, that a fever is present; and from the absence of which they conclude, that a person is free from a fever.

562. Then, from these symptoms and phenomena, duly discovered (561), and maturely weighed, the particular nature of the fever is to be found out.

563. All fevers, arising from an internal cause, are accompanied with horripilation, a quick pulse and heat, at different times, and in various degrees of the disorder.

564. The fever in which the horripilation, quick pulse, and heat (563), proceed with velocity and danger, is called an acute fever.

565. The fever, on the contrary, in which these three symptoms proceed slowly, either with or without danger, is called a slow fever.

566. Both these species of fevers (564, 565), are either common and epidemical, or only affect particular persons.

567. Those

567. Those are called acute febrile disorders, which are accompanied with an acute fever (564); whereas those are called chronical febrile diseases, which are attended with a slow fever (565).

568. Hence it is, that all these febrile disorders (567), are not to be explained, without a previous knowledge of the nature of that fever, with which they are accompanied.

569. Now the nature of the attendant fever is to be estimated, from the three common symptoms before specified; which are, horripilation, a quick pulse and heat (563).

570. Though these symptoms (563), are present, at some time, in every fever, yet the velocity of the pulse, is the only symptom which continues from the beginning, to the end of the disorder; and by which the physician judges, that a fever is present.

571. In consequence of this, whatever knowledge a physician has of a fever, depends entirely on the velocity of the pulse.

572. The proximate cause, therefore, of this velocity (571) of the pulse is, in like manner, the proximate cause of the fever, thus known from its symptoms.

573. This cause may, therefore, be a too quick contraction of the heart.

574. A too speedy reciprocal influx of the nervous fluid, conveyed from the cerebellum, into the muscles and cavities of the heart.

575. Almost all fevers hitherto observed, arising from an internal cause, begin first with a sense of cold, concussion and horripilation; and this sense is greater or less, shorter or longer, internal or external, according to the diversity of patients, causes and fevers.

576. In the beginning, therefore, of every fever arising from an internal cause (575), the pulse is quick, small, and frequently intermittent; whilst there is often a paleness, coldness, rigor, tremor, and insensibility of the extremities.

577. Hence

577. Hence it is obvious, that, in this period of the disorder, the sanguineous humours become stagnant in the extremities of the minute vessels, whilst, at the same time, there is a cause irritating the heart to a stronger contraction.

578. From these two circumstances (577), we discover the cause of all the symptoms (575, 576), which appear on such an occasion, and are before enumerated.

579. In all fevers where these symptoms (575, 576, 577) have preceded, there arises an heat, which is greater or less, shorter or longer, internal or external, according to the diversity of fevers.

580. As the heat (579) succeeds the fever already produced, it is obvious, the former must be rather the effect, than the cause and essence of the latter.

581. Hence a quick contraction of the heart, and an increased resistance of the capillary vessels, are circumstances which account for all acute fevers.

582. Both of these circumstances (581) may, in a live animal, be produced by numberless and infinitely various causes; and as they may happen either jointly or separately, so when one is produced, the other easily follows.

583. For this reason, the proximate cause of a fever (581), which consists in the quick contraction of the heart, and the increased resistance of the capillary vessels, may itself have an almost infinite number of proximate causes, which are,

584. Either singular, and peculiar to some persons; or universal and common to many: and these depend on the state of the air, the quality of the aliments, and the patient's method of life.

585. The singular causes, therefore, of a fever, are either particular, or epidemical.

586. The proximate particular causes (583) of a fever, may be reduced to five classes; which are, first, acrid aliments, drinks, fauces, medicines or poisons, when either possessed of such a property, as that they
cannot

cannot be digested, moved and evacuated ; or, when taken in such a quantity, as to irritate, suffocate and obstruct the vessels, by their putrefaction ; secondly, the retention of such things in the habit as ought to be evacuated, in consequence of cold, unctious, gloomy dispositions of mind, improper aliments, drinks, medicines, poisons, a cloudy and foggy air, ease, a remission of usual exercises, obstructions of the vessels by their contents, or compressions of them by surrounding substances ; thirdly, too much exercise of the mind, or body, and preternatural heat ; fourthly, external applications of an acrid, pungent, corroding, lacerating, caustic and inflammatory nature ; and fifthly, such substances as induce a great change in the humours and their motion, such as many external and internal things, hunger, excessive evacuations, the pus, water and ichor, in a dropsy and empyema, an acrid serum collected in any part, an hot state of the bile, an inflammation, a suppuration, a gangrene, a cancer, long protracted watchings, intense study of any kind, and excessive venery.

587. The effects of a fever are, a brisk expulsion and propulsion of the fluids, an agitation of their stagnant parts, a mixture of all their particles, a prevalence over the resisting matter, a concoction of the humours ; a secretion of the concocted parts, and a crisis of that, which by its stimulating and coagulating quality, produced the fever ; a change of health, and soundness into a morbid state ; a change of health into a disposition fit for bearing those things, to which the patient was little accustomed before ; an expression of the most fluid parts of the humours, and inspissation of the rest ; thirst, heat, pain, anxiety, weakness, lassitude, a sense of weight, and loathing of food.

588. The sooner the viscosity of the juices is resolved (577), and the more expeditiously the irritation is allayed (574), the slighter, shorter, and more salutary the fever is ; and on the contrary, it is the more violent, long and injurious, the longer it is before the
vis-

visciduity of the humours is resolved, and the irritation allayed: fevers are, also, various, according to the several degrees and conjunctions of this irritation and visciduity.

589. Hence it is, that fevers often exert the same efficacy with medicines, with respect to other diseases.

590. Hence also the beginning, increase, height, decrease, crisis, change, and cure of fevers are various, in acute and particular fevers.

591. A fever terminates in death, some other disorder, or in health.

592. It terminates in death, when the solids are destroyed by a force acting too strongly on them; or when the fluids are so depraved and peccant, as to obstruct the vital vessels, or those through which new fluids ought to be conveyed, in the room of those lost: hence arise inflammations, suppurations, and febrile gangrenes, in the vital viscera, the heart, lungs, and cerebellum; or aphthous ulcers in the primæ viæ, the frequent causes of death in fevers.

593. A fever terminates in other diseases, when, either by a too violent agitation, it injures the vessels, and, dissipating the more fluid parts of the humours, inspissates the rest; or when, by a too weak action, it is unable, by its force, to resolve the coagulated parts of the fluids; or, when it deposits the critical matter in some obstructed, dilated, or ruptured vessels: hence arise red spots, pustules, erysipelas, measles, small-pox, phlegmons, bubos, inflammations of the parotid glands, abscesses, gangrenes, sphacelus, and schirrhus, &c.

594. A fever terminates in health, first, when by its force it subdues, resolves, renders moveable, and carries off, by insensible perspiration, the material cause of the fever; and, at the same time, checks its impetus, by restoring an equable circulation: this universal resolution almost resembles the resolution in the inflammation of a particular part (386); secondly,

ly, a fever terminates in health, when the matter of the disease, being, by the force of the fever, subdued, resolved, and rendered moveable, yet retains a certain quality, by which it resists the equable circulation of the blood, stimulates the vessels, and, by exciting some sensible evacuation, is expelled: hence sweat, a discharge of the saliva, vomiting, a diarrhæa, and copious discharge of urine, happen critically, after the concoction of the matter; and the state of the disease, generally within fourteen days.

595. A fever, also terminates in health, when the matter of the disease being, by the force of the fever, subdued, resolved, rendered moveable, and again, assimilated with the sound humours, circulates without any crisis, or the induction of any other disease.

596. The genius, difference, and duration of acute fevers; when observed from the beginning through the increase to the height of the disease, enable us to prognosticate its event; several changes, and final termination.

597. From all the circumstances (from 558, to 597), therefore already enumerated, the general diagnostics and prognostics of fevers may be easily deduced.

598. The general cure of fevers is most effectually obtained, first, by preserving and supporting that strength upon which life depends; secondly, by correcting and expelling the acrid irritating matter (574); thirdly, by dissolving and expelling the viscid juices (577); and, fourthly, by mitigating the symptoms (587).

599. The strength on which life depends, is supported by aliments, and drinks of easy digestion, opposite to putrefaction; allaying thirst, fit for increasing the appetite, and contrary to the known cause of the disorder. (S. e 28. N. 1. 4.)

600. The aliments are to be exhibited at the time the fever is absent, or, at least, when its force is weakest.

601. The aliments are to be exhibited in a small quantity, though frequently repeated at intervals, lest the viscera should be oppressed, or a change induced on them.

602. The quantity and quality of the aliments are to be estimated and determined, first, from the probability of the duration of the fever, (588, 589, 590, 599, 597) whether for one, four, seven, nine, eleven, fourteen, twenty-one, thirty, forty, or sixty days; for as much aliments ought to be exhibited as are sufficient for supporting the strength, and rendering it fit for the purposes of concoction, and a crisis: the shorter the disease, the less and the weaker the aliments ought to be; whereas the longer the fever, the more and the stronger they ought to be; secondly, from the age of the patient; for the younger and the older persons are, with the greater difficulty they bear hunger; thirdly, the height and vehemence of the disorder, when known, require aliments of various virtues, and exhibited in different quantities: in the height, a small quantity of light aliments is to be used; but, in the increase and decline, the more and the stronger ought the aliments to be, the more the disease is distant from its height; fourthly, from the place in which the patient lives: for those who live near the equator, commodiously bear light food, which does not so well agree with those who live near the poles; fifthly, from the season of the year; because the summer requires light, and the winter stronger aliments; sixthly, from the custom and natural constitution of the patient: for, the person, who when in a state of health, using delicate aliments, has them easily digested, requires a pretty large quantity of aliments, because the vessels and viscera were accustomed to them before; and, seventhly, from the sense of lightness or weight succeeding the use of the aliments.

603. Any external irritating substance, such as the acute fragments of glass, metal, wood, stone, and bones,

bones ; stimulating, corroding, vesicating, caustic, septic, and poisonous substances ; or such as produce a redness of the parts, are, with all expedition, to be removed ; and the parts in which such substances were lodged, and are injured by them, are to be fomented with viscid, mucous, mild, oleous, anodine, and gently aperient fomentations. Thus,

Take six quince-seeds, and of the distilled waters of rose and elder-flowers each three ounces : make into an emulsion, to which, when pure, add half an ounce of rectified spirit of wine, and one dram of the tincture of opium.

This intention is, also, answered by the unguentum aureum, basilicon, diapompholygos, the unguentum nutritum, ointment of poplar, and ointment of roses.

604. The acrid irritating substance lodged internally, such as the acrimony of an inflammation, supuration, gangrene, sphacelus, cancer, carious bone, ichor, pus, and acrid or stagnant lymph, is to be removed, or corrected, by the methods prescribed under their respective articles.

605. An acrid irritating quality, induced on the fluids, may, and ought to be corrected by the use of the six non-naturals, and various remedies adapted to the known state and nature of the disorder : this intention is excellently answered,

First, by rest, both of the body and mind ; abstinence from too much exercise ; by moistening, diluting, mild, and lenient substances ; such as ptisans, and laxative decoctions.

Secondly, By temperating the excessive heat of the air ; by cooling exhalations, especially those of plants proper for this purpose ; by drinking subacid, gently nitrated water, with a small quantity of subacid wine, by subacid, gently demulcent, and moderately salted aliments ; and, by medicines of a similar nature. Thus,

Take of the decoction of barley twenty-five ounces; of pure nitre one dram; of Rhenish-wine six ounces; of the robs of currans and elder each two ounces: mix all together, and let the patient take an ounce or two every quarter of an hour.

Take of the distilled waters of succory, fumitory, and baum each three ounces; of the spirit of common salt one dram; of the syrup of mulberries two ounces; and of pure nitre half a dram: mix all together, and let the patient take a spoonful every half hour.

Take of the crystals of tartar two drams; and of pure nitre half a dram: reduce to a powder, of which let the patient take half a scruple every three hours, in some proper ptisan.

Thirdly, By correcting the excessive moisture of the air, by large fires of aromatic and resinous woods, and by the exhalations of aromatic substances. Thus,

Take of the recent herbs of marjoram, curled mint, origanum, and rosemary each two handfuls; of the flowers of Roman chamomile, red roses, tansy, and lavender each one handful; of Syrian marum half an handful; of the roots of Florentine orris, garden-angelica, and masterwort, each three ounces; of the shavings of saffrafrs two ounces; and of bruised seleri-seeds three ounces: cut all down, and reduce to a powder, to be sprinkled in the room where the patient is.

Fourthly, by correcting the putrid state of the air, by throwing nitre, gunpowder, vinegar, and salt upon live coals.

Fifthly,

Fifthly, if a fever is excited by affections of the mind, these are to be regulated by reason, and contrary affections, by variety of objects, anodynes, and opiates.

Sixthly, when a fever proceeds from acrid, acid aliments, this acrimony is to be diluted, checked, absorbed, and changed into a compound salt; and this effect is produced by the aqueous and gelatinous parts of animals, by oleous and cretaceous substances, shells of fishes, crabs-eyes, pinguious earths, alkaline, fixed, volatile, simple, and compound salts. See from (60 to 69.)

Seventhly, when the fever arises from acrid saline aliments, this acrimony is to be diluted by aqueous medicines, and evacuated at the same time; tempered by mild oleous medicines, and corrected by lixivious preparations of quick-lime.

Eighthly, when the fever proceeds from acrid, aromatic, and heating aliments, the acrimony is to be diluted by aqueous fluids, corrected by acids, resolved and deterged by saponaceous acids, and tempered by mild, glutinous substances. As alcalescent acrid substances belong to this class, so we hence learn the method of treating fevers produced by them.

Ninthly, when a fever is produced by the alcalescent parts of animals, it is to be cured by the measures directed from (76 to 91.)

Tenthly, when a fever proceeds from too large a quantity of aliments, or the use of such as constrict the stomach, it is to be cured by dilution, fasting, vomiting, and rendring the body soluble; gentle vomits may be prepared in the following manners:

Take of light barley-water thirty-six ounces; of oxymel of squills three ounces; and of vitriolated tartar, which is not acid two drams: mix, and let the patient take two ounces every half hour.

Or,

Take of the rob of elder three ounces ; vinegar of squills one ounce ; and distilled baum-water six ounces : mix all together, and let the patient take half an ounce every half hour.

Or,

Take five grains of emetic-tartar, for one dose.

Or,

Take one ounce and an half of emetic-wine for a dose.

Or,

Take of white ipecacuanha-root one scruple, reduce to a powder, to be taken for one dose.

Or,

Take of the powder of ipecacuanha-root four scruples ; and of white-wine three ounces : boil in a long phial for four hours ; and exhibit the liquor when strained for one dose,

Or,

Take five recent leaves of asarabacca, cut down ; pour upon them boiling water ; let them infuse for half an hour, and exhibit the expressed juice for one dose.

Eleventhly, a fever brought on by acrid, fermented, or fermenting liquors, acid, oleous, aromatic, or distilled fluids, or a simple acrimony, is to be removed by the same remedies, with those mentioned above in N. 5, 6, and 8.

Twelfthly, a fever arising from excessive watchings is cured by the same methods, with those recommended above in N. 1, 2, and 5.

Thir-

Thirteenthly, if a fever arises from an alkaline, acid, oleous, or saponaceous putrid acrimony, contracted by a retention of the excrementitious humours, these must be rendered moveable, their passages must be lubricated, and their proper emunctories opened; in mean time the vital powers, which expel them, must be stimulated and augmented: and this is to be done both by internal and external remedies.

The principal excrementitious humours, which, if retained, are capable of exciting a fever, are the *fæces* of the belly, the urine, the lochia, the hæmorrhoidal blood, and the perspirable matter.

606. The emunctories are opened by resolving the matter fixed therein, and by relaxing them when obstructed: this is done by baths, clysters, frictions, abrasion of the hairs, and cleansing of the skin. See from (107 to 144.)

607. What stagnates at the extremities of the conical vessels, on account of too great a quantity of blood, by which the vessels are compressed, is reduced to a state of fluidity, by diminishing the quantity of blood by venesection; and we learn, that this is the case, by the signs of a plethora, specified under 106.

608. What adheres to the extremities of the capillary vessels, on account of spasmodic contractions of their fibres, by which their capacities are diminished, is resolved by relaxing the fibres from (53 to 55), and removing the acrimony which causes their contraction for the methods of doing which, see (35, 36, 54, 66, 67, 88, 102, 103, 104, 105, 127, 128.)

609. What adheres on account of its own viscosity, and lentor, is resolved by various remedies, the principal of which consists in a due moderation of the fever itself, in such a manner, that by means thereof the coagulation may be resolved (587, 589, 593, 594) it is therefore necessary, to regulate the fever in such a manner, first, that no inflammations, suppurations, gangrenes, or sphacelations (592), may be produced; the danger of which is evinced, by the violence of the

symptoms, particularly heat, compared with the strength of the vascular system.

Secondly, that the most fluid parts of the blood may not be dissipated by too violent a motion thereof; the signs of which dissipation are, a dryness of the nostrils, eyes, throat and tongue; an hoarseness, a dryness of the skin, a diminished excretion of Urine, and a small, quick and unequal pulse.

Thirdly, that before the concoction of the febrile matter, the fever may not become too weak, so as to be incapable of subduing, moving, secreting, and excreting the cause of the disease. This state is distinguished by an universal languor of all the vital actions, before the signs of concoction appear.

610. In case the febrile motion is exorbitant (101), it must be moderated by abstinence, or an extremely slender diet, by aqueous drinks, by a somewhat cool air, by calming the passions of the mind, by venesection, refrigerating clysters, and by mild, aqueous, glutinous, refrigerating, anodyne, and opiate medicines. Compare from (92 to 106.)

Refrigerating clysters may be prepared in the following manner:

Take of pure nitre two drams; of honey of roses one ounce; and of recent whey twelve ounces: mix for a clyster.

Or,

Take of common vinegar one ounce; of native nitre three drams; of solutive syrup of roses, with fena two ounces; and of a decoction of barley twelve ounces: mix for a clyster.

Or,

Take of butter-milk ten ounces; and syrup of pale roses two ounces: mix up for a clyster.

Or,

Or,

Take of the common emollient decoction, eleven ounces; of pure nitre three drams; and of honey of mercury one ounce and an half: mix for a clyster.

611. If the fever is too languid, it must be raised by a cardiac regimen, consisting of the more generous sorts of food and drink; by respiring a somewhat warm air; by exciting the passions of the mind, by acrid, volatile, aromatic, fermented medicines; by frictions, heat, muscular motion, baths and fomentations.

FORMS OF MEDICINES IN A FEBRILE LANGUOR.

Take of oxymel of squills three ounces; of *Matthioli*'s spiritus-vitæ three drams; of distilled mint-water four ounces; and of distilled cinnamon-water one ounce: mix all together, and let the patient drink an ounce every hour.

Take of the diascordium of *Sylvius* one scruple and an half; of the theriaca andromachi one dram and an half; of the syrup of the five aperient roots two ounces; and of the distilled water of carduus benedictus six ounces: mix all together for the same use.

Take of the confection of alkermes one dram; of candied ginger six drams; of the roots of contrayerva, and virginia snake-root each one dram; and of the syrup of the five aperient roots, a sufficient quantity for making a conserve: of which let the patient take half a dram every four hours.

Take of the countess of *Kent*'s powder one scruple and an half: and exhibit it for a dose every four hours.

Take

Take of white ginger, *Winter's* bark, of the roots of zedoary, contrayerva, and *Virginian* snake-root, each one dram; and of the troches of vipers two drams: reduce to a fine powder, to be divided into doses of one scruple and an half; one of which is to be taken every four hours.

Take of the salt of carduus benedictus half a dram; of burnt hartshorn one dram; of red coral two scruples; and of the distilled oils of cinnamon, and citron-peel, each three drops: reduce to a powder, to be divided into ten doses, for the same use.

612. Next to the due regulation of the febrile motion (609), the most important remedy against the viscosity of the juices is, the restitution of the elastic force of the vessels, by diminishing the quantity of fluids, by copious venesection, performed with expedition, and form a large orifice; and immediately after, or at the same time, increasing their motion by stimulating remedies.

613. Lastly, the viscid juices are rendered fluid, by diluting with aqueous drinks, baths, fomentations, and clysters; using at the same time frictions.

614. And these have a much better effect, if taken warm; if resolvent salts, as nitre, are mixed in a due proportion with the aqueous fluids; and if gently aromatic, bitter, and lactescent cooling vegetables are boiled in them.

The bitter lactescent cooling vegetables are,

Gum-succory,

Succory,

The several species of hawkweed,

Endive,

Lettuce,

Viper's-grass,

- Sow-thistle,
- The several species of dandelion,
- Goats-beard,

615. But that these (613, 614), may operate well, expeditiously, safely, and with efficacy, venesection is to precede their use; for this facilitates their ingress, their mixture with, and action upon the blood.

616. So soon as by these remedies (609, 610, 611, 612, 613, 614, 615), the morbid viscidities is dissolved by a continuation of the same, and sometimes augmenting their actions, it is forced through the vessels, and expelled; sometimes, however, it may be so far subdued and corrected, as to be rendered similar to the healthy juices, and require no expulsion. (594 N. 1.

617. The usual symptoms accompanying an acute fever are cold, tremors, anxiety, thirst, nausea, eructations, vomiting, weakness, heat, restlessness, dryness, delirium, coma, watchings, convulsions, sweats, diarrhæas, and inflammatory pustules.

618. All these symptoms (617) arising from, and caused by the fever (581, 587) cease spontaneously, when that is removed (594, 595, 598 to 617); for this reason, they require no particular method of cure, provided they can be supported without endangering life, till the termination of the fever.

619. But it must be remarked, that these symptoms frequently arise from an attempt of the vital powers to form a crisis, and expel the critical matter; and then they precede, accompany, and follow the crisis; in which cases, nothing must be done to moderate them, which can in any degree interfere with the salutary work carrying on by nature.

620. But if any of these symptoms are unseasonable, or too severe to be supported without the hazard of life; if so troublesome, as to render the patient unsupportably uneasy; or if there is danger of their producing some more formidable disorder, in such cases,

cases, they must be mitigated by remedies adapted to them; always having due regard to the cause (586), and state (590), of the original distemper.

FEBRILE SYMPTOMS, *and first of* FEBRILE
COLD.

621. **C**old in the beginning of acute fevers, arises from a decreased attrition of the liquids with each other, and their respective vessels; a diminution of the circulatory motion; a stagnation of the liquids at the extremities of the vessels; a diminished contraction of the heart, or only a partial evacuation of its ventricles; and a less copious influx of the spirits conveyed from the cerebellum.

622. This cold, if of long duration, causes poly-pose concretions in the larger vessels near the heart; and in the small vessels an evacuation of the fluids they ought to contain, in consequence of their contraction; and in both these cases many and severe disorders are excited.

623. Hence the reasons are evident, why intense coldness, in the beginning of acute fevers, is of very bad presage why the fever is dangerous, in proportion to the cold perceived upon its first attack; and why in the beginning of the plague, an excessive sensation of cold is succeeded by as excessive a degree of heat.

624. If any attempts are made to remove the coldness in the beginning of acute fevers, by any remedies which stimulate briskly, under whatever denomination, a foundation is frequently laid for an incurable inflammation in the sequel. For this reason, all kind of acrid saline medicines, aromatic and oleous substances, and vesicatories, are to be condemned in these cases, as highly pernicious.

625. But a much more safe, and effectual method of cure may be pursued, by exhibiting warm aqueous drinks impregnated with nitre, a little honey and
wine,

wine; by baths, vapours, fomentations, and lotions, made of the same sorts of liquors, and by moderate frictions.

626. For these, (625), used at first, are capable of curing and preventing very great disorders (622.)

Take of barley-water thirty ounces; of pure nitre two drams; of simple oxymel three ounces; and of distilled aromatic clove-water two ounces: mix all together, and let the patient every quarter of an hour, drink two ounces pretty warm.

Take of the four greater and lesser cold seeds, each two drams: make into an emulsion with water; with three pints of which mix, of distilled fennel-water four ounces; of sal prunellæ two scruples; of the syrup of the five aperient roots two ounces; and of the syrup of violets half an ounce: to be exhibited for the same purposes with the other.

Take of distilled borage-water one pint; of the distilled water of rose-flowers one ounce; of distilled elder-flower-water eight ounces of distilled cinnamon-water one ounce and an half; of *Mattbiolus's* spiritus vitæ half an ounce; and of *Fernelius's* syrup of mugwort two ounces: mix all together, and exhibit for the same use.

Coffee, decoctions of saffrafrs and sanders, together with others of a like nature, are of singular service in the cold fit, especially if towards the end of their preparation a small quantity of some aromatic substance is added. Thus,

Take of the white, yellow, and red sanders each one ounce: boil in water for a quarter of an hour: then add of the roots of fennel four ounces; of the shavings of saffrafrs two ounces; and of liquorice

quorice half an ounce: let them boil for a moment, and strain off four pints, for the same use with the other.

FEBRILE TREMOR.

627. **A** Tremor is a vacillation of the muscles, betwixt the state of tension, and that of relaxation, the distending and relaxing causes suddenly, and involuntarily, succeeding each other; which supposes an alternate cessation, and repetition of the influx of the arterial, and nervous fluid into the muscles: in the beginning of a fever, therefore it arises from a partial stagnation of both the above-mentioned fluids; but, in the latter end of a fever, a deficiency of them, after they have been too much dissipated.

628. A tremor, if of long duration, causes impediments to the circulation of the vital humours, and all their fatal consequences.

Hence we discover the diagnostic and prognostic signs of a febrile tremor.

629. The presence of the tremor is sufficiently obvious to the senses; and we may also know from what cause it proceeds, whether for instance, it arises from a plethora, as in plethoric persons, who are frequently seized with a tremor, or from a stagnation of the fluids, a slowness of their motion, or a defect in their quantity, which generally happens in the end of diseases, or after copious evacuations. A plethora is known by its peculiar signs before enumerated, a stagnation of the fluids, is discovered by those signs, which indicate, that the functions of the lungs and brain are injured, because a free circulation of the blood through the minute vessels, is absolutely necessary to the soundness of the actions depending upon these viscera. The too slow circulation of the fluids, is obvious from the weak and slow pulse, together with the languor of the whole body. And the want of a due quantity of fluids is known from preceeding copious evacuations, a collapsed

lapsed state of the vessels, and the weakness of the patient.

As for the Prognostic.

This informs us, that if the tremor is long continued, we have reason to dread an obstruction of the circulation, and all the misfortunes depending upon that circumstance. Besides the prognostic determines whether the cure of the tremor will be easy or difficult, expeditious or long protracted, especially according to the diversity of the productive cause; for if it arises from a plethora, it will easily be removed by venesection, and other evacuations. If it arises from a stagnation of the blood, the cure is generally more slow and difficult. When the tremor proceeds from penury of blood, after violent evacuations, it may indeed be cured, if the patient's strength is not so far exhausted, that the aliments cannot be converted into laudable humours. But the cure in this case requires as long a time as is necessary to restore what was lost. But when a tremor arises from violent passions of the mind, which induce a change on the *common sensory*, and is not removed when the passions are allayed, but remains long and rages with force, a difficult, and often an impossible cure may be prognosticated.

Why a tremor is accompanied with a sense of cold?

During the febrile tremor, the pulse which is small and frequently intermittent, together with paleness of the patient's complexion, indicate a stagnation of the humours in the minute vessels, in consequence of which the motion of the arterial blood is greatly disturbed, since one moment, the pulse is almost imperceptible, and the next becomes very conspicuous. Besides, the secretion of the spirits, and their motion through the nerves, require a free circulation of the arterial blood, through the vessels of the brain, in consequence of which

which it is obvious, that in such a case the motion of the spirits through the nerves must be disturbed: Hence the two causes of muscular motion, which are the influx of the arterial blood, and the nervous fluid into the muscles will be disturbed, so that it is sufficiently easy to assign a reason why a tremor accompanies a febrile coldness.

Why an excessive tremor is so bad a sign?

A violent tremor is so bad a sign, because it indicates either the penury or stagnation of the arterial and nervous fluids. And such a tremor appearing in the beginning of a fever, denotes the power and efficacy of the cause which is capable of exciting so violent commotions in a body before sound. Besides, as an excessive tremor obstructs the circulation of the humours, a numerous train of misfortunes is justly to be dreaded from it: it is also to be observed, that unless these tremors which appear in the progress of acute fevers and other diseases, precede critical evacuations, they often afford as bad prognostics, because they generally indicate that the matter of the disease is conveyed to the head, where it disturbs the equable motion of the nervous fluid, in the very origin of all the nerves, which is the medullary substance of the brain: hence *Hippocrates in Coac Prænot.* N. 29. Charter, Tom. 8. affirms, "that tremors are mortal in patients labouring under a violent phrenitis;" and, *ibid.* N. 95. and *Prorrhætic*, Lib. 1. N. 14. Charter, Tom. 8. he says, "that tremors happening to those who are rendered delirious by a redundancy of black bile are bad." And in *Coac Prænot.* N. 347. Charter, Tom. 8. and *Prorrhætic* Lib. 1. N. 29. he says, "that if those who have a palpitation over their whole body become speechless they die." An instance of this, he furnishes us with in Lib. 1. *Epidem.* Ægr. 4. "were the patient described becoming phrenetic, was deprived of his speech the second day in the morning

" morning, was seized with palpitations all over his body, and on the fourth day died." Many more similar instances might be added from *Hippocrates*, but these are sufficient to prove that tremors often lay a foundation for bad prognostics in diseases.

Why a tremor is brought out by violent passions of the Mind.

It is not to be doubted, but the whole common sensory may be disturbed by violent passions of the mind; so that it is not surprising that a tremor should, in consequence of this circumstance, arise from an irregular influx of the nervous fluid into the muscles. Though persons transported with anger, or an excess of joy, are equally seized with a trembling all over the body, yet a tremor principally succeeds dread or terror. Thus *Dolon*, *Hector's* spy, when seized by *Diomedes*, is by *Homer* beautifully represented as stammering in his speech, striking his superior and inferior teeth against each other, and trembling all over the body. I myself knew a man, who being suddenly waked from his sleep by thunder, was seized with an universal tremor, which lasted the twenty remaining years of his life. It is therefore obvious, that by violent passions of the mind, and especially by terror, such a state of the common sensory may be induced, as that by the slightest causes the motion of the spirits is disturbed, and a violent tremor brought on, though the patient is in every other respect perfectly sound.

Why a tremor happens about the time when the patient dies?

A tremor is produced where the influx of the nervous and arterial fluids sometimes happens, and sometimes ceases: but about the time of a patient's death, the irregularity and intermission of the pulse indicate,

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that

that the blood can hardly any longer be conveyed from the right ventricle of the heart through the lungs to the left ventricle: hence the heart is not strongly contracted, but trembles and palpitates very quickly, till in a few moments after, such a quantity of blood is conveyed to the left ventricle of the heart, that, being by this means irritated, it contracts itself more strongly, and propells the blood contained in it, with greater force into the arteries, than it did before: hence on this occasion there is a greater influx of the arterial blood into the muscles, and a more forcible conveyance of it to the brain, by which means the motion of the spirits through the nerves is augmented; but soon after, all these accidents cease, till the subsequent repletion and contraction of the heart produce them again: hence it is obvious, that about the death of a patient, the influx of the arterial and nervous fluids, is sometimes performed and sometimes ceases; from which circumstance a tremor arises. Thus *Hippocrates*, in *Coac Prænot.* N. 64, *Charter.* Tom. 8. tells us, "That in patients reduced to a bad condition, small tremors, (*Τὰ σμίκρα Τετονώδια*) and eruginous vomitings, are mortal signs.

Why a tremor happens after all excessive evacuations?

A sufficient plenitude of the vessels, and especially of the arteries, is requisite to the equable circulation of the humours; for, as is obvious from physiology, there are two causes by which the blood is conveyed through the vessels, and these are, first, the force by which the heart expels the blood into the arteries, and by that means dilates them; and, secondly, the contraction of the distended arteries, which propels the blood they contain, whilst during the diastole of the heart its action ceases: but unless the arteries were previously distended, they could not contract themselves; nor could the heart distend the arteries, unless the latter were full at the time, when the former

former forces the blood contained in its cavities into them ; for, if the arteries were empty, or so little filled, that in the smallest diameter of their contraction, they were not in every point of their internal surface contiguous to the fluid they contain, it is sufficiently obvious, that the blood expelled from the heart, might fill the arteries without dilating them ; in consequence of which, their subsequent contraction would not happen. But as the larger arteries are strong and elastic canals, they are not collapsed, tho' the fluid which ought to fill them should be wanting, but remain in the smallest diameter of their contraction : hence if there is so great a loss of humours, that in the greatest contraction of the arteries, a due plenitude is wanting, it is obvious that their systole cannot act on the fluids they contain, in consequence of which death, which is a total cessation of motion in the blood must happen. But when a violent evacuation carries off only such a quantity of humour, that there may still be some, though a weak distension, of the arteries produced by the blood expelled from the heart, the circulation will not entirely cease, but will become languid and unequable : hence the influx of the arterial and nervous fluid into the muscles, will be disturbed, and a tremor by that means produced. Thus in the killing of animals, we observe, that they tremble after a large quantity of blood has flowed from them ; and it is confirmed by daily experience, that tremors happen after violent diarrheas, choleras, or any other quick and profuse evacuation.

Why a Tremor happens after excessive drinking of whatever kind of liquor?

When liquors are daily drank to excess, the quantity of fluids to be transmitted through the vessels is augmented, in consequence of which a greater disten-

sion of the vessels than usual is produced. But a preternatural distension of the vessels, especially if often repeated, is succeeded by a morbid weakness of the fibres, hence the vessels may indeed be more easily dilated, but they will re-act with less force upon the distending fluid, and upon this re-action the motion of the fluids through the vessels in some measure depends. Besides when the liquor drank is evacuated by sweat or urine, the fibres before distended being now weakened, do not with sufficient force contract themselves towards the axis of the vessels which they form, in order to make an universal and equable compression upon the contained fluids: hence symptoms will be produced similar to those arising from excessive evacuations. This is the reason why those who daily use large quantities of tepid aqueous liquors, are so frequently afflicted with a trembling of their limbs, and these symptoms are still augmented, because by such liquors the aqueous fluidity of the blood being increased, all the vessels and viscera are by that means weakened, in consequence of which the last elaboration of the highly subtle nervous fluid is less successfully carried on. But a tremor most frequently succeeds the abuse of wine or fermented spirits, which are observed to produce a far greater distension of the vessels, than aqueous liquors. Hence unless persons addicted to such liquors, have their vessels perpetually distended with them, they are afflicted with an universal tremor, become languid, and are rendered unfit for all the duties of social life. Thus, though they are sensible of their error, a desire of relief, forces them to the repeated commission of it.

630. A febrile tremor is cured by restoring an equable influx of the arterial fluid into the arteries, and its due pressure upon them, and of the spirits of the cerebellum into the moving fibres. This is done in the beginning of the fever, by such remedies as dissolve viscidities,

viscidities, and restore the strength (from 606 to 617), which are specified above: but at the latter end of a fever, by whatever expeditiously recruits the dissipated liquids, and corroborates the fibres and viscera (46, 47, 48, 49).

FEBRILE ANXIETY.

631. **A** Nxiety is caused by some impediment to the egress of the blood from the heart; and, in consequence of this, from an impossibility of its due circulation through the ramifications of the pulmonary vessels, and those of the aorta: and these arise either from a spasmodic contraction of the small vessels, or an inflammatory spissitude of the blood, which renders it incapable of circulating through the proper canals. Or the same symptom is produced by an impediment to the passage of the blood through the vena portæ, from the same causes: since, there all the blood convey'd to the abdominal viscera by the cæliac and mesenteric arteries, and thence to the vena portæ by the veins, cannot pass farther, it must there stagnate, distend the vessels, and resist the fresh influx of blood into the arteries last mentioned, thereby producing the most fatal consequences. On this account it is absolutely necessary, in all acute distempers, to observe, with the utmost diligence, the causes of both these species of anxiety; and, by all possible means, to remove them.

632. If such an anxiety (630), continues long about the heart and vital parts, it will produce polypole concretions, inflammations, and sudden gangrenes, accompanied with intolerable uneasiness, and soon succeeded by death, but that, whose cause is situated in the hypochondria, will produce an excessive sickness at the stomach, the other viscera, in the mean time, having not so acute a sensation: this is succeeded by sudden putrefactions of the blood, contained in the large and weak vessels about the liver; whence gangrenes, pu-

trefaction of the liver, and a fatal dysentery arising from such a putrefaction.

633. From what has been said, the physician may understand the cause and nature of such an anxiety (630, 631) and what presage may hence be drawn; and, at the same time, he will distinguish between that species of anxiety, excited by some nervous disorder only, without a fever, previously discovered by its proper signs. And by comparing this with the violence and duration of the symptom, and the part where the disorder resides, he will be enabled to discover its nature; and to learn why, in all diseases, at the approach of death, the last scene is closed with extreme anxiety; why a convulsive anxiety is not attended with much danger, but an inflammatory anxiety with a great deal; and why uneasiness, restlessness, sighing, difficult respiration, and obstinate want of sleep, in suppuratory or inflammatory distempers, are the forerunners of death.

634. Hence likewise, it is evident, that various methods of cure are required, in order to mitigate the severity of this disorder; in the discovery and application of which the physician will be duly instructed by a previous knowledge of the particular nature of the symptom.

When therefore it is discovered, that the affection is excited by spasms, it is to be removed by rendering the acrid, irritating matter, of whatever nature, mild (603, 604, 605); by expelling it, by means of vomits, cathartics, sudorifics, diuretics and abstersives; by diluting with warm aqueous fluids; by calming the affections of the mind; by relaxing the fibres, vessels, and viscera (35, 36, 54, 55); and by moderating the tumult of the nervous fluid with anodynes and narcotics.

The following vomits are proper in fevers.

Take

Take of oxymel of squills three ounces; and of distilled succory-water five ounces: mix for a draught.

Take eight recent assarabacca-leaves; infuse for four hours, in the distilled water of cardus benedictus; and exhibit five ounces of the expressed tincture for a draught.

Take of white vitriol twenty five grains: reduce to a powder, to be exhibited in a small quantity of beer.

Purgatives proper in fevers are these following.

Take of the crystals of tartar five drams: reduce to a powder, and exhibit in warm whey.

Take of the crystals of tartar two drams; of sal prunellæ twelve grains; and of sal polychrestum sixteen grains: reduce to a powder, to be taken for a dose.

Take of scammony seven grains; and of distilled succory-water half an ounce: make an emulsion; to which add twelve drams of the solutive syrup of roses, with senna, to be taken for a draught.

Take of taraminds three ounces; of the troches of agaric three drams; of senna-leaves one dram; and of figwort half an ounce: boil in water, and to eight ounces of the expressed liquor, add half a dram of sal-prunellæ, and an ounce and an half of solutive syrup of roses with senna: of this let the patient take two ounces every half hour, till he begins to be purged

Take of prunes four ounces; of taraminds one ounce; of fena-leaves two drams: boil with water for half an hour; exprefs through a cloth, and with twelve ounces of the liquor, mix two ounces of the syrup of succory with rhubarb: of this preparation let the patient take three ounces every half hour, till he begins to be purged.

Take of the *Electuarium Diaprunum* of *Sylvius* one dram and an half; of the powder of fena-leaves one scruple: make up for a bolus.

The same intention is also answered by the following medicines, exhibited in the doses specified. The *Electuarium Diaprunum*, or cholagogum of *Sylvius* half an ounce; the confectio hamech four drams; the heira picra of Galen one dram and an half; lenitive electuary one ounce; and electuary of the juice of roses half an ounce.

Sudorifics proper in fevers are always of a diluting and aperient nature, and may be prepared in the following manner.

Take of the roots of smallage half an ounce; of the roots of burdock, and china-root, each one ounce; of roots of succory, grass, navew, parsley, rapes, and butcher's-broom, each half an ounce; of sarsaparilla one ounce; and of viper's grass half an ounce; of the leaves of sorrel, succory, endive, and dandelion each one handful; of elder-flowers two ounces; and of the bruised seeds of smallage, and parsley each one ounce: boil in three pints of water, of which the patient is every quarter of an hour to drink three ounces warm, till a gentle sweat is excited. After this formula a great many more may be prepared.

Diuretic medicines, proper in fevers, are these following;

One

One part of recent milk, mixed with three parts of water, whey, buttermilk; the juice of the birch-tree, the recent juices of mature summer-fruit diluted in water, nitre, antimoniated nitre, sal-polychrestum, and the preceeding sudorific decoctions, used with a diuretic regimen.

Absterfive medicines, proper in fevers are the same with those already mentioned.

If the anxiety is excited by an inflammatory viscosity of the blood, this viscosity must be dissolved and diluted, the vessels must be relaxed; and the impetuosity of the vital fluid, must be checked: with these views, let the patient drink copious draughts of aqueous liquors, in which farinaceous vegetables have been boiled, impregnated with honey and nitre, somewhat acid, and slightly aromatic. Let fomentations, cataplasms, epithems, and plaisters, composed of diluting, relaxing, emollient, and anodyne ingredients, be applied to the region affected. Let clysters, at the same time, made of the like ingredients, and small in quantity, be frequently injected, and if possible, be retained a long time. And let the vapour of warm water, mixed with emollients be perpetually drawn into the lungs, through the mouth and nostrils.

635. And let it be remarked, that this symptom above all others requires a safe immediate cure, on account of the severity thereof, and its consequences.

FEBRILE THIRST.

636. **T**Hirst is excited by a dryness of the solids, an immeability of the fluids, and a saline, alkaline or bilious and oleous acrimony.

637. Thirst therefore, always evinces that some one of these causes (633) is present.

638. And on this account, it prognosticates all the evils which are capable of being produced by such causes (635, 636.)

638. Care

639. Care must therefore be taken, to remove immediately this symptom of thirst, particularly in acute distempers.

640. Thirst is removed, first, by drinking frequently, and in small quantities at a time, aqueous, subacid, nitrous, demulcent, warm liquors; of which kinds are the following.

Take of common simple barley-water forty ounces; of the rob of currants four ounces; as many drops of the spirit of salt, as are sufficient to procure a grateful acidity, and of distilled cinnamon-water one ounce: mix for ordinary drink.

Four ounces of the robs, jellies, or syrups of the following fruits taken as above, may be used: the robs jellies, or syrups, for instance, of currants, quinces, black cherries, barberries, mulberries, raspberries, pomegranates, lemons, citrons, common and china-oranges. Thus,

Take of the jelly of quinces once ounce; of the diamoron of nicolaus two ounces; of the syrup of citron-juice one ounce; of the distilled waters of borage and baum each four ounces; of common water twenty-four ounces; and of rhenish-wine three ounces: mix all together.

Drinks proper in a febrile thirst are, also these following: milk and water, whey, butter-milk, small beer, coffee, and one part of wine mixed with twelve parts or pure water, and a little lemon juice.

Secondly, thirst is removed, by washing the nostrils and gargarizing the mouth and fauces, with the same kinds of fluids as those above recommended.

Thirdly, by applying fomentations, epithems, and cataplasms, of the same nature, to the region of the hypochondria.

Fourthly,

Fourthly, By the use of similar clysters, retained a considerable time.

641. But if a very great thirst is accompanied with extreme weakness, it will be safe to exhibit vinous, or more spiritous liquors, mixed with those above-recommended (639). Thus,

Take two of the best citrons, take out the seeds, pare of the yellow bark, throw away the whole fungous substance, and bruising the yellow bark, and the pulp together, put them in thirty-two ounces of simple barley-water; to which add, of the syrup of mulberries an ounce and an half; of Rhenish wine eight ounces; and of toasted bread two ounces: to be preserved in a close earthen vessel.

Or,

Take of the syrup of lemons three ounces; spirit of wine one ounce and an half; of Rhenish wine four ounces; and of pure common water fourteen ounces: mix all together, for ordinary drink.

A FEBRILE NAUSEA.

642. **A** Nausea is an ineffectual effort to vomit, accompanied with an idea of horror; it is therefore excited by slight convulsions of the muscular fibres, of the fauces, oesophagus, stomach, intestines, and abdominal muscles: these are caused

First, by an acrid, putrid, and bilious matter received into the empty stomach, thence ascending into the fauces, which together with the stomach, it velleicates, and irritates. Hence the parts above-mentioned are drawn into consent, and excited to similar motions: and that a nausea is thus caused, we distinguish by previous fasting, by a putrid breath and sordidness of the mouth, and fauces. Or,

Secondly,

Secondly, by a tenacious viscid fluctuating matter, residing in, and vellicating the same parts. This species of nausea is distinguished by the previous signs of such a viscidty from (69 to 75). Or,

Thirdly, by a slight inflammation of the stomach, œsophagus, intestines, and adjacent viscera: this is distinguished by the proper signs of such inflammations.

Fourthly, by the remembrance of something, which, formerly taken into the stomach, excited such nausea.

Fifthly, by an inordinate motion of the nervous fluid, excited by any cause whatever: this is distinguished by deliriums, spasms, a vertigo, and tremor.

643. If a nausea persists long, it produces emptiness, abstinence from proper drinks and medicines, vomiting, and many misfortunes which may hence be excited; the principal of which are, weakness, an alkaline putrid acrimony, and universal dryness.

644. A nausea from the first cause (642. N. 1.) is to be cured by the use of acid, nitrous, aqueous drinks, and by the aliments, and medicines recommended against febrile thirst; by the exhibition of a lenient purge of the same kind; by acid, austere medicines, which corroborate the fibres; or, if these do not succeed, by vomiting: as for drinks in this species of nausea. See (640, 641).

The second species (642. N. 2.) is to be removed by diluting, attenuating, purging, and emetics. The medicines here proper are the same as those recommended in a febrile anxiety. See (634).

The third species (642. N. 3.) is only to be removed by curing the inflammations which excite it.

The fourth species is cured by forgetting and avoiding the ideas which cause it.

The fifth species is removed by austere remedies, rest, narcotics and cold water. Thus for instance,

Take

Take of the rob of quinces four ounces; of the fy-rup of lemons two ounces; of *Matthiolus's* distilled aqua vitæ one ounce; of distilled cinnamon-water six drams; of the distilled water of citron-peels six ounces; and of the tincture of opium sixty drops: mix all together, and exhibit one ounce for a dose till the nausea is removed.

Take of strong distilled mint-water a sufficient quantity: and let the patient drink an ounce of it cold every quarter of an hour.

Take of the rob of quinces a sufficient quantity, of which let the patient take one dram every half hour.

Take of recent lemon-juice half an ounce; and of Rhenish-wine one ounce: mix both sufficiently together; add one dram of the salt of worm-wood; and exhibit during the paroxysm.

Take thin slices of lemon, sprinkled with sugar to be kept lying on the tongue.

Most patients find relief from epithems, fomentations, cerates, and stomachic applications, especially when there is no inflammation. Thus,

Take of the aromatic powder of roses, of diagalanga, and the diarrhodon abbatis each one ounce: mix all together, sew up in a piece of musline, apply to the epigastrium.

Take of the stomachic cerate of *Galen* a sufficient quantity for making a stomachic plaister, to be spread upon leather. This plaister affords relief, so long as it adheres.

Take of *Matthiolus's* aqua vitæ one ounce; of the spirit of angelica-roots, of the carminative spirit of

of *Sylvius*, and of the spirit of mint, each two ounces: let a small slice of toasted wheaten bread, well soaked in these, be applied warm to the epigastrium applying over it in a swine's bladder moistened with oil, and secured by bandage. This dressing is to be renewed every twelve hours.

645. Hence we understand, why in acute disorders accompanied with a nausea, purgatives and emetics exhibited in the beginning are so beneficial, and in what species of acute disorders they are so.

In these disorders, a corrupted, acrid, and bilious matter, lodged in the stomach or adjacent parts, frequently excites a continual nausea, which not only lasts till the peccant matter is dislodged, but also becomes daily more violent, by the free access of the air to these parts, and an increase of the heat, by means of the fever. This circumstance lays a foundation for vomitings, or soon after for an highly putrid diarrhea, which often proves fatal, because in the progress of the disease, the patient's strength is so weakened, that he cannot bear an evacuation. For this reason, if in the beginning of the disease, the putrid bilious matter is dislodged, by an emetic or proper purgatives, all these misfortunes are prevented. This method often proves the most effectual of all others in acute autumnal fevers, which generally rage epidemically, after intensely hot summers, in which the bile is over-heated by the sultry state of the air. Almost all the fevers of this kind are of the continual intermittent species, consist of the redoubled paroxysms of intermittents, and frequently when their violence is subdued, become legitimate intermittents. But in acute inflammatory fevers, such as those of the continual kind, which generally rage about the latter end of the spring, or beginning of the summer, this method would for the most part prove ineffectual, because the nausea accompanying such fevers, often arises from an inflammation of the stomach or parts adjacent to it,

so

so that the symptoms are forthwith increased and augmented by vomits.

Why persons afflicted with acute disorders, have such an aversion to pinguious substances, fleshes, eggs, and fish, but are fond of water, acid liquors, summer-fruits, and cooling substances?

Pinguious substances, fleshes, eggs and fish spontaneously degenerate into a kind of putrid and corrupted substance, and as most of the functions are injured by the fever, the aliments are subdued and digested with difficulty, or perhaps not at all, in consequence of which they undergo the change, to which they have a spontaneous tendency. It also frequently happens, that in acute diseases, a putrid bile is lodged in the stomach and adjacent parts. Hence provident nature, who alone is often sufficient for the cure of diseases, by a salutary instinct, prompts such patients to covet aqueous liquors, acids, summer fruits, and all those things which procure a grateful coolness to the body, over-heated by the fever; for such substances alleviate the parching thirst, wash away the corrupted matter, lodged in the *primæ viæ*, correct a begun, and prevent a future putrefaction by their mild saponaceous quality, resolve concretions, and frequently by their gentle stimulus render the body soluble.

Why unless the nausea is removed, medicines are of no service to the patient?

So long as the nausea continues, the patient loaths every thing, and the stomach is so easily irritated by whatever is taken, as to throw it up by vomit. As therefore in acute fevers, the nausea generally depends either on an acrid bilious matter, lodged in the *primæ viæ*, or on an inflammation of the stomach, and adjacent parts, it is sufficiently obvious, that medicines
when

when taken, can be of no use unless the nausea is by their means removed; for unless the bilious matter lodged in these parts, is either carried upwards or downwards by the medicines, or at least so corrected, that the parts, by which the nausea is excited, are no longer irritated into such convulsions; no relief is afforded to the patient, and the corrupted matter remaining, will by its malignity contaminate the fluids, which act upon it, augment the nausea, and produce a vomiting, and unless it is expelled by this vomiting, it, by its continuance, and the heat of the places, acquires such a malignant quality, as to excite an highly putrid diarrhæa and dysentery, which generally prove mortal, after the patient's strength is exhausted by the violence of the disease, and the long continuance of the nausea.

Why this symptom is frequently incurable?

In some cases it is incurable, because the causes of the nausea, cannot be removed; for if there is such a violent inflammation of the stomach, and adjacent parts, that it cannot be resolved, the nausea arising from it will be insuperable. Thus also, when in a corrupted liver, a putrid impostumation, by a continual dropping, conveys its putrid matter through the hepatic duct, into the duodenum, there will be a perpetual nausea, which can never be cured, unless the putrid fomes in the liver is previously removed, which frequently cannot be done. In this case vomits are always dangerous, because it is justly to be dreaded, lest in the efforts of vomiting the putrid liver should be torn to pieces; and though the putrid matter fluctuating in the stomach, and duodenum could be eliminated, yet a similar matter would soon be collected there again, so that the nausea, will remain proof against all remedies, only it may be often alleviated by acids, and especially the spirit of sea-salt, than which no medicine is more efficacious for correcting
putre-

putrefaction. A troublesome and incurable nausea, is some times produced, when the whole interior surface of the fauces, œsophagus, stomach and intestines is wet with a certain mucus, and affected almost in the same manner with the internal membrane of the nostrils, in catarrhus defluxions from the head. This disorder is principally incident to old and studious persons. Those who daily drink large quantities of spirits, are also afflicted with a nausea, especially in the morning, when their stomachs are so languid and cold, that unless they are again stimulated by spirituous liquors, they labour under a perpetual nausea, and a vomiting of viscid phlegm. Hence they are fatally obliged to continue a practice so destructive of health. It is also certain from experience, that during the first stage of pregnancy, the nausea resists the best medicines, till after the third or fourth month, it is either spontaneously lessened or totally removed.

Why the various species of nauseas sometimes disappear, the patients discovering a sudden unusual and surprising relish for some particular aliments.

Practical authors furnish us with numberless observations and histories of persons, who, after a long protracted nausea, and loathing of almost every kind of aliment, have suddenly discovered an excessive fondness for such things as their physicians and friends thought hurtful and injurious. The most skilful physicians, have however, been very careful in ordering their fellow practitioners, not always to adhere too rigidly to the laws of their profession, when patients ask for things apparently improper; for these unaccountable longings for particular things, are sometimes the efforts of nature to remove disorders, and frequently prove more beneficial than the best chosen medicines. Sydenham in sect. 5. cap. 2. observes, that towards the end of a certain continual epidemical fever, the patients whose fate it was to recover earnestly asked

for some seemingly improper aliment or liquor; and he says, he willingly allowed them such things as seemed preposterous, and ill suited to their condition, because there was an absolute necessity of recruiting their exhausted strength. When physicians imagine that the things earnestly desired by the patients, have a tendency to remove the known cause of the disorder, they generally comply with their requests. When for instance, patients labouring under acute disorders ask for small cooling liquors, ripe fruits, and a free cool air, physicians generally allow them these advantages. But when in the end of these diseases, they ask for salt herrings, red herrings, or other aliments of hard digestion, their physicians generally make remonstrances and refuse their demands, because they think such a permission would be incompatible with the rules of their art. But as Doctor *Sydenham* justly observes in his *dissertat. epistolar.* " Every one who is in the least acquainted with the practice of physic, provided he is at the pains to advert to what happens, must readily grant, that a great many patients, who, on such occasions rejected the rules of the physician, and humoured their own inclinations, have by such a step been forthwith rendered better." But as these rules of medicine are most certain, which are drawn from a knowledge of such things, as are hurtful or beneficial, and as there are many things, of which we are still ignorant, and perhaps may be so for a long time, it seems sufficiently consistent with the prudence of a physician, not always to oppose the sudden and unusual longings of his patient, but rather comply with them, unless they crave things, which would necessarily be productive of bad consequences. Patients of this kind generally long for acid or saline substances, both of which resist all putrefaction; and most frequently a prostration of appetite, and a loathing of food, are by such substances removed from pregnant women. Thus *Tulpius*, in *observat. med. lib. 2. cap. 20.* tells us of a pregnant woman who after she had for a great while been

been afflicted with a loathing of every kind of food, had at last a great longing for crude sallads and salt-fish, upon which alone she lived six months. The same author in lib. ii. cap. 24. gives us the history of a pregnant woman who was so fond of salt herrings, that from her impregnation to the time of her delivery, she eat one thousand and four hundred of them, without injuring her stomach, or sustaining any other loss.

Febrile ERUCTATIONS and FLATULENCES.

46. **E**RUCTATIONS are caused by an elastic matter dilatable by heat, effervescence, or fermentation; which one moment is confined, and the next set free, by relaxation of the part which confines it, and is forcibly exploded, with a noise.

647. Thus air, opposite salts, ripe fruits, putrefying humours, and fermenting vegetables, afford matter for eructations and flatulences; the force and fetidness of which vary, according to their different natures.

648. These (646) however, if suffered to pass off freely, are productive of no forcible explosion: it is evident, therefore, that spasms of the sphincter of the œsophagus, of the œsophagus itself, of the superior and inferior orifice of the stomach, and of the intestines, concur and are alternately relaxed, in order to produce eructations, flatulences, explosions of wind from the anus, and murmurings of the intestines from wind confined.

649. If the two causes above-mentioned (646, 647), that is a production of flatulences, and their confinement by spasms, concur, act strongly, and continue long; then the elastic matter, dilated by heat, motion, and its own proper force, and confined in a cavity, the surrounding fibres of which are spasmodically constricted, distends, stretches, and excites pain in the membranes which confine it, and com-

presses the adjacent parts, hence pains and intolerable anxieties, are excited, which cease upon the emission of the flatulences. See (220, to 227, and 631, 634.) To this, if the force of a fever is added, it is evident, that insupportable torments may be produced.

650. The cure of the disorder consists,

First, in removing the matter (647) which excites them, by diluting remedies; by warm, aqueous, and somewhat aromatic, dissipating drinks; by remedies which render the effervescent salts perfectly neutral; such as correct putrefaction, and put a stop to fermentation.

Secondly, in mitigating the convulsions by proper remedies; among which are, those which destroy acrimony, and compose the spirits; the principal of which are, opium, and mild antihysterics.

Thirdly, in the application of warm, relaxing anodyne, and somewhat aromatic clysters, fomentations, and epithems; and of cupping-glasses without scarification, to the abdomen.

651. *From what has been said, we are enabled to answer these otherwise obscure questions; What aliments, liquors, poisons and medicines are of a flatulent quality.*

As for ALIMENTS.

All these are of a flatulent nature, which by the heat of the body generate an elastic air; or rather from which the latent air is disengaged by the heat, and again resumes its elastic force. *Malpighi* has demonstrated, that there is real air in the vessels of plants; *Mr. Boyle*, and *Dr. Hales*, have with incomparable industry, and by many experiments shewn, that there is a surprising quantity of elastic air in vegetables, the parts of animals, and even in many fossiles, from all which it may be disengaged. All these vegetables therefore, which contain a large quantity

tity of elastic air, are flatulent aliments, because they supply a copious matter for flatulences. If at the same time there is in these vegetables, such an acrimony as is capable of so irritating the fibres of the stomach and intestines, as that they are spasmodically contracted, the two causes of flatulences will concur, and such substances are said to be the most flatulent of all others: hence, garlicks, onions, turnips, and radishes, produce copious flatulences; because they not only contain a large quantity of air, but also by their acrid stimulus irritate the *primæ viæ*: but these substances are most flatulent when used crude, since by boiling, the heat of the water, expels a great deal of the elastic air contained in them. All substances which have a tendency to fermentation and putrefaction, are also of a flatulent quality, because a large quantity of elastic air is disengaged both from fermenting and putrefying substances; for this reason, almost all ripe fruits, especially when the weather is excessively hot, are of a very inflating nature. All glutinous substances may be also reckoned flatulent, because in eating them, a large quantity of common air may be mixed with them, which being rarified by the heat of the stomach and intestines, is again expelled thence.

As for Liquors.

Water is of all other liquors the least flatulent, because by the heat of the body, the air contained in it, cannot be so disengaged as to become elastic; but the most flatulent liquors, are those which are drank in a state of fermentation; such as bottled ale, which flies out with great force when the cork is taken out, and by the imprudent use of which, colics, iliac passions, and choleras, are frequently produced: those liquors are also flatulent, which, tho' not as yet in a state of fermentation, are yet soon after put into a ferment by the heat of the body;

such as must, new wine, and ale, prepared without any bitter herbs; such as hops or wormwood.

Though the ancients were perhaps ignorant of the cause, why these substances produced flatulences, yet they were sufficiently acquainted with their effects from experience and observation. Thus *Celsus*, in lib. ii. cap. 26, among the substances which inflate, enumerates "all pulses, pinguious, and sweet substances, pottages, must, new wine, garlicks, onions, cabbages, and whatever is crude".

As for Poisons.

The most acrid and corroding poisons, are flatulent, not because they generate an elastic matter, but because by irritating the fibres of the stomach and intestines, they produce violent spasms, by which the elastic air in the *primæ viæ* is pent up; and being rarified by the heat, distends these delicate parts so as to produce intense pain; but such poisons as have at the same time a power of inducing a sudden putrefaction of the humours, are of all others the most violent and formidable: hence the reason is obvious, why arsenic, corrosive sublimate, and other acrid, corrosive poisons, so distend and tumify the abdomen, that it frequently bursts: perhaps there are other surprising poisons, which without inducing a putrefaction of the humours, are able by some other latent quality, to disengage the air from the humours, and, by that means produce a flatulent tumor of the whole body.

As for Medicines.

All medicines of whatever kind, which are possessed of a considerable acrimony, are flatulent, especially if exhibited to persons whose nervous system is easily irritated: hence acrid emetics and purgatives, often excite violent gripes and flatulences. The very
remedies

remedies also exhibited for dispelling flatulences, may in some sense be said to be flatulent themselves, since by their gentle stimulus, they excite mild and short continued spasms in the stomach and intestines, and by this means alleviate the more violent spasms of the other parts. Many of the substances enumerated among the flatulent foods and drinks, are also frequently used as medicines. Thus the juices of ripe fruits, garlicks and onions are often prescribed for particular intentions.

Why flatulences happen when the primæ viæ are empty.

Flatulences happen on this occasion, because then a large quantity of air, without restraint wanders through the intestines; whilst at the same time the affluent bile and remains of the aliment, becoming acid by their continuance, gently stimulate and irritate those parts. Hence the air is here and there intercepted by slight spasms, and when these are resolved, it wanders from place to place, and produces a rumbling, for persons who fast long, frequently belch up a bitter and acrid bile, or a saline, and sometimes an acid liquor. For this reason the empty intestines of hungry persons are said to murmur or make a noise.

Why flatulences happen to persons who are wounded.

Flatulences may happen to wounded persons, either on account of the violent hemorrhages, by which spasms and convulsions are excited, or because the nervous or tendinous parts are injured by the wound. But flatulences are most frequently produced by wounds inflicted on the abdominal viscera, and especially the mesentery and intestines.

Why flatulences happen when the abdomen is pent up and compressed.

Flatulences happen to persons in this situation, because the intestines being compressed, the elastic air contained in their cavity, has its free passage intercepted and prevented. Hence young girls, whose mothers foolishly confine them in too narrow stays, have the whole of their abdomen so compressed, that they are often afflicted with severe flatulences, till their stays are unlaced, and the abdominal viscera restored to their natural liberty.

Why flatulences happen to hypocondriac persons.

Persons affected in two distinct and different manners, come under the same common denomination of hypocondriac, for either the atrabiliarian sordes of the blood, deposited in the abdominal viscera, disturbs their action, and taints the humours which ought to be secreted by them, and the efficacy of which is absolutely necessary to the due permutation of the aliments. For this reason the aliments are not changed into a laudable chyle, but spontaneously degenerate into a corrupt and crude acid, or into a putrid alkali, or a rancid oleous substance. Hence a large quantity of elastic matter is generated, and, at the same time, the intestines are irritated, and spasmodically contracted by the aliments, which have acquired an acrimonious quality. Hence eructations and flatulences, which are so frequent in hypocondriac patients, are signs of an atrabiliarian matter, lodged in the abdominal viscera. Other hypocondriac patients, without any signs of an atrabiliarian cacochymy, are frequently afflicted with abdominal spasms, by which the air continually lodged in the stomach, and intestines is intercepted, so as to produce eructations and flatulences. This species of disorder is principally incident to persons

persons who employ their minds much, without using sufficient exercise of body. Hence studious men are often afflicted with this misfortune, which seems to arise totally from an irregular motion of the spirits. Such patients are said to be hypocondriac without matter, in contradistinction to the other class of hypocondriacs, whose misfortunes proceed from black bile lodged in the abdominal viscera.

Why flatulences are incident to hysteric Women.

Women labouring under a preternatural mobility of the nervous system, and an inordinate motion of the animal spirits are called *hysteric*, because these misfortunes are generally imputed to some disorder of the uterus. But if we compare the symptoms of that species of hypocondriac disorder in man, which is produced without an atrabiliarian matter, with those of the hysteric passion in women, we find them so similar that they can hardly be distinguished, as *Sydenham* in dissertat. epistol. has observed. Hence the reason is obvious, why hysteric women are afflicted with eructations and flatulences.

Why flatulences are incident to persons afflicted with convulsions.

Convulsions indicate a disturbed motion of the nervous fluid, rushing with alternate force, into the convulsed muscles; and from the convulsions, a perturbation of all the actions is justly to be dreaded; for it is certain, that the actions of the brain, and of the nerves which depend upon it, may be greatly disturbed by convulsions. It is not therefore surprising that similar effects should be produced in the nerves dispersed through the abdominal viscera, by which means spasms, and consequently eructations and flatulences will be produced.

Why

Why flatulences are common to persons labouring under a colic.

They who are afflicted with frequent pains of the colon, are said to be subject to a *colic*. But though in this intestine an Inflammation may produce an intense pain, and though a sudden gangrene arising in it, may prove mortal, yet the colic in the common acceptation of the word, is not so formidable a disorder, since though it frequently recurs, it generally derives its origin from the feces, so congested in the colon, as to intercept and obstruct the free passage of the flatulent matter: Thus *Celsus* in lib. 1. cap. 7. tells us, “ that
 “ the lax intestine called the colon, is sometimes seized with a pain, which proceeds from no other cause
 “ than a certain kind of inflation,” and a little after he advises persons subject to this disorder, to avoid cold and abstain from flatulent substances. Hence it is obvious, that this disease is of long continuance, and recurs by turns, as the same author in lib. 4. cap. 14. expressly tells us in the following manner, “ that disorder which consists in a distension of the intestines,
 “ principally discovers itself about the coecum, and is
 “ accompanied with violent inflation and intense pain,
 “ rather towards the right than left side. The intestine
 “ seems as it were to be inverted, so as almost to suffocate the patient; it seizes most of those who are
 “ subject to it, after cold and crudities. Then it ceases
 “ for some time, and recurs with the same symptoms,
 “ thus racking the patient without shortening his miserable life.” From the words of *Aretæus* in lib. 2. *de causis & signis morborum*, it is sufficiently obvious, that the flatulent matter, intercepted by the spasmodically constricted intestines, produces the colic, for says that author, “ if the patient takes but a small
 “ quantity of aliment, which is not of a flatulent
 “ kind, he is violently inflated and seized with a desire of evacuating the offending matter, but the
 “ flatulences

“ flatulences find no vent ; violent eructations also “ happen without affording any relief.” And these eructations are of an acid taste and nauseous smell. Hence it is sufficiently plain, that persons labouring under a colic, are afflicted with flatulences and eructations, which is still farther confirmed by the nature of the remedies, which *Celsus*, in lib. 4. cap. 14. recommends for the cure of this disorder ; for he orders dry and warm fomentations, and cupping without scarification, which are very efficacious in curing those spasms, which constitute the efficient cause of the flatulences. Besides, the medicine invented by *Cassius*, and which from its great efficacy in this disease was called colicon, contained among other ingredients, anise, castor, pepper, and the tears of the poppy, all which are highly efficacious in discussing flatulences. It is also to be observed, that in the same passage, *Celsus* orders “ to draw off the flatulent matter by friction of the extremities, which are the arms and legs”, as if he had been apprised, that nature often effects to carry off the disorder by that way, as is sufficiently obvious in that species of colic, which is called the *Colica Piætonum*, in which after three or four violent paroxysms, the extremities become paralytic, and are gradually extenuated, but the colic is removed.

FEBRILE VOMITING

652. **V**omiting is a violent expulsion : first, of the contents of the stomach ; then of those of the intestines ; and lastly, of those of the viscera, which evacuate themselves into the intestines. The proximate cause of vomiting is a convulsive motion of the muscular fibres of the fauces, œsopagus, stomach intestines, diaphragm, and abdominal muscles ; the remote cause, whatever is capable of stimulating the fibres above-mentioned, or the easily irritable viscera, to spasmodic contractions.

635. Vomiting is sometimes excited by a primary disorder of the stomach, upon the access of a fever; if it is affected with convulsions, inflammations, supuration, or scirrhus, or if any part of it is become cartilaginous: in those cases it is excessively obstinate, and may be distinguished by the signs of the distemper which produces it; and when that is removed it ceases spontaneously.

654. But frequently vomiting is caused by similar disorders in the viscera, and circumjacent parts, when they are irritated by the stomach, distended with aliments, especially upon the access of a fever. In such cases it is extremely obstinate, and the cause is sometimes entirely unknown.

655. Or a vomiting may be excited by every cause of a considerable nausea (642), mentioned above, from the doctrine of which this species of vomiting may be distinguished; and hence also, we may learn how to treat, and cure it.

656. If the symptom of vomiting continues long, it produces an atrophy, the iliac passion, convulsions, and all the effects of a great and obstinate nausea mentioned above (643).

657. The cure of that species of vomiting, which is excited by primary disorders of the stomach, and those of the adjacent parts (653, 655), is to be learnt from the history of these particular diseases.

658. That species which is produced by the same causes (642, 635), as a nausea, is to be cured by the remedies recommended (644) for a nausea, diligently applied; especially opiates, and corroborating, attracting, and dissipating epithems.

659. *Hence we plainly perceive, the reason of the difficulty of stopping vomitings in many acute diseases.*

In acute fevers, there is often an inflammation of the stomach, intestines or viscera adjacent to the stomach, and this inflammation produces the vomiting,
which

which of course cannot be stopped till its cause the inflammation is removed, which can never be done without difficulty, and sometimes not at all; vomitings of eruginous bile, succeed wounds, concussions or compressions of the brain. Hence, when in inflammatory disorders of the head, the functions of the brain begin to be remarkably disturbed, such a vomiting is excited, and cannot be stopped, unless the inflammation in the head could be cured. Hence *Hippocrates* affirms, "that in head-achs, eruginous vomitings, accompanied with deafness, and watchings, presage the speedy approach of a violent delirium." The black bile which has long remained fixed in the intestines, when resolved and put in motion by any cause whatever, excites highly acute fevers, and besides other terrible misfortunes, a nausea and vomiting which cannot be removed, unless the turgescient black bile could be evacuated, or so corrected as to prove less hurtful, which cannot be done without great difficulty.

Hence we also perceive the falsity and dangerous tendency of this maxim, that vomiting is cured by vomiting.

It has been almost universally received as a law in practice, that whenever diseases were accompanied with a nausea and vomiting, it would be beneficial to promote the vomiting, from a supposition, that by this means, the matter of the disease was evacuated by the very ways, to which nature had a tendency. Physicians were confirmed in this doctrine, because the method often succeeded well, when a redundant or acrimonious bile, or a preternatural quantity of phlegm fluctuating in the *primæ viæ*, excited the vomiting. But it is certain, that an inflammation of the stomach or parts adjacent, a scirrhus, ulcers, and sometimes a cancer produce obstinate vomitings; and it is no less certain, that in such cases the exhibition of emetics greatly augments all the symptoms. This rule is no less

less fallacious, when the vomiting is excited by an inordinate motion of the nervous fluid, since on such an occasion emetics augment the commotion. *Hippocrates*, in lib. de locis in homine, cap. 15. chapter 8th, judiciously limited this rule, by saying, "that vomiting was only removed by vomiting, when the matter which excited the vomiting, was eliminated by means of the emetics.

Why sudorifics often remove a vomiting as in the plague?

Sydenham observed, that persons labouring under the plague, were often afflicted with such a severe vomiting, that the medicines exhibited were forthwith thrown up, in which case he abstained from the use of medicines, till by the weight and warmth of the bed-cloths, the sweat began to flow; for says this author in sect. 2. cap. 2. "When the morbid matter is conveyed to the surface of the body, those fluxes and vomitings, which proceeded from its being turned inwards upon the stomach and intestines cease spontaneously". *Sydenham* was so confident of his being able to allay vomitings by this means, that when the brother of a certain apothecary, was seized with a violent pestilential fever, and had in vain used the strongest sudorifics, because they were thrown up by vomit, he promised he would take such measures as would prevent the vomiting, though the most loathsome of all the medicines before used, should be exhibited. The success accordingly justified the promise, for as soon as by the great weight of the bed-cloths, the patient began to be in a gentle sweat, he not only swallowed, but also retained a large bolus of the theriaca, by which a copious sweat was brought on, and the disorder terminated. But when the begun sweat was by any cause obstructed, and stopped before the matter of the disease was totally expelled, all the symptoms forthwith recurred.

Why a vomiting is often stopped when a crisis happens, as in the small pox?

The contagion of the small pox when received into the body, often affects the stomach first, as is obvious from the cardialgia, the sense of uneasiness, the nausea, and vomiting, which so often afflict the patient in the first stage of this disease. All these symptoms generally remain during the first stage, which is called that of the contagion, till by the subsequent fever, the poisonous matter is conveyed to the surface of the body, and produces inflammatory pustules, which afterwards terminate in abscesses or gangrenes. Then all the symptoms are generally diminished, and the vomiting ceases, when the poisonous stimulus and the humours contaminated by it, are conveyed to the surface of the body. But when the vomiting remains after the eruption, it indicates either that the pocks have seized the internal surface of the stomach or oesophagus; or that the bile rendered acrid by a violent preceeding fever irritates the stomach.

Why vomiting is often stopped by venesection, as in acute inflammatory disorders?

This happens, because in such disorders, the vomiting is frequently produced by an inflammation of the stomach, or adjacent parts, or even of the brain; but it is certain from experience, that venesection is of all other things, most effectual for the cure of an inflammation. Sydenham gave a lady of distinction, labouring under an acute inflammatory fever, an emetic which in other cases he often found beneficial, in order to stop a vomiting; but he candidly confesses his error, and tells us, that he afterwards cured others labouring under a similar fever, by repeated venesection, as in a pleurisy.

Why

Why those, who in the beginning of an acute fever, are afflicted with a perpetual vomiting without an inflammatory cause, have a diarrhæa instead of a crisis, which ought to be prevented by the exhibition of emetics in the beginning of the disease?

This happens because on these occasions, a redundant or acrid bile, almost always irritates the stomach; and this bile assuming a malignant quality by its continuance, and the fever, and being conveyed to the intestines, excites in the end of the disease, a diarrhæa, which is often dangerous, because the strength of the patient is so exhausted, that he cannot bear violent evacuations. This misfortune principally happens in that species of continual fever, which frequently rages in the Autumn, and accompanies that epidemic constitution which favours the production of intermittent fevers. As therefore, intermitting fevers rage epidemically oftener than other disorders, so the continual fever which accompanies them, must also be more frequent, as *Sydenham* in sect. 1. cap. 3. justly observes. The same author in sect. 5. cap. 6. upon a review of what he had learned of epidemic constitutions from the experience of many years; justly concludes, that this is the primary fever of nature, because it occurs more frequently than others, and because the maxims of the antients relating to crises, agree better to it than to other fevers. Autumnal intermittents which generally rage at the same time with this continual fever, seem to be of a similar nature, and double tertians and quartans, with double protracted paroxysms, frequently terminate in this continual fever, as he tells us, in sect 1, cap. 4. whereas this fever sometimes becomes intermittent: hence *Sydenham* in sect 1. cap, 3. justly calls this continual fever a kind of *compound* of the autumnal intermittents, whereas every paroxysm of these intermittents, is, as it were, a certain compound of this
acute

acute fever; the principal difference, (to use the author's words) *consisting in this, that those of the continual kind perform their effervescence always in the same continued tenor, whereas the intermittents have their effervescences at different times and periods.* Hence it is obvious, of how extensive use this practical rule is, since it not only extends to acute continual fevers which occur so frequently, but also to intermittents which often rage epidemically: I have often observed, that when these acute and intermittent fevers raged at the same time, a vomit exhibited in the beginning, produced very happy effects; though as *Sydenham* has also observed, the matter thrown up by vomit should be neither very large in quality, nor of remarkably bad qualities: but when in the progress of the disease, an emetic which was neglected in the beginning is exhibited, a surprising load of bilious fordes is thrown up, by which the patients forthwith perceive an immediate relief, the fever proceeds gently without any symptoms, and the diarrhæa so often fatal in the end of these disorders is always prevented. The whole difficulty consists in distinguishing, whether the disorder proceeds from an inflammatory cause; but the season of the year, a knowledge of the epidemic constitution, and a faithful observation of such things as either prove injurious or beneficial, afford us some light in this respect. The autumn is most productive of intermittents, whereas the spring and beginning of the summer favour the production of inflammatory disorders: but they are carefully to be distinguished, since *Sydenham* himself, ingeniously confesses, that he was deceived in forming a judgment of this kind.

Why the immediate vomiting of every thing taken into the stomach, is a bad sign in acute diseases?

This circumstance almost always denotes, that the stomach, the diaphragma, which is contiguous to it,
S

or the adjacent viscera, are seized with a violent inflammation: hence, by a very inconsiderable repletion of the stomach, these viscera are so irritated as to produce a vomiting, by which these parts are violently pressed, so that it is to be dreaded lest the present inflammation, suddenly degenerates into a mortal gangrene. A vomiting of this kind is of an highly dangerous nature, because it prevents the use of diluent and antiphlogistic medicines, a large quantity of which is generally requisite for the cure of such disorders.

From the same causes an hiccup may be produced, which may be cured by the same means.

An hiccup seems to be a convulsion of the oesophagus, tending to draw the diaphragma upwards, whilst at the same time, it is suddenly seized with a convulsive paroxysm, and drawn downwards. The symptoms observed in a person afflicted with the hiccup, seems to evince the truth of this observation, and generally an uneasiness is perceived about the mouth of the stomach, and about the fauces, after a long-continued hiccup; but this convulsive motion happens so suddenly, that it cannot be determined what parts act in order to the production of the effect. For this reason, *Sydenham* in sect. 1. cap. 4. ingeniously confesses, that he could not satisfy himself with respect to the cause of an hiccup. But it is sufficiently obvious, that this disorder proceeds from a convulsive motion of the oesophagus; and this doctrine is confirmed by *Hippocrates*, who in sect. 6. aph. 39. affirms, that convulsions and an hiccup, proceed from the same causes; "for, says he, convulsions, as well as an hiccup, proceed either from "repletion or inanition;" and in a great many other passages, he represents convulsions as attended with
 . Thus in sect. 5. aphor. 3. he tells us, an hiccup fions or an hiccup succeeding a copious
 "that convul, are bad signs;" and in the subsequent
 "hemorrhage aphorism

aphorism he says, "convulsions or an hiccup succeeding excessive purging, are bad signs:" But as a nausea and vomiting proceed from a convulsion of the fibres, which constitute the muscles of the oesophagus, fauces, and stomach, it seems probable, that an hiccup arises from the same cause, and may be cured by the same measures; for it generally arises from the same cause with a vomiting, and is often the concomitant of an inflammation of the stomach.

Hippocrates in sect. 5. aph. 58. informs us, that an hiccup succeeds an inflammation of the liver; and in sect. 7. aph. 10. he says, that a vomiting and hiccup may be produced by an inflammation of the *Ilium*. It is often observed, that in histeric patients an inordinate motion of the spirits produces an hiccup, which is only to be cured by altering the determination of the spirits, or allaying their tumultuous commotion; and this effect is often happily produced by irritating the nerves of some other part of the body, or by the exhibition of an opiate.

Hippocrates in sect. 6. aphor. 3. observes, that sneezing succeeding a suppression of the hiccup, terminates the disorder; because by an irritation of the nerves distributed through the nostrils, there is a change made in the direction of the nervous fluid, which whilst the hiccup was present, was conveyed with too great an impetus into the fibres of the oesophagus. *Sydenham* in sect. 1. cap. 4. affirms, that diascordium, because it contains opium, was an effectual cure for the hiccup, when the seeds of dill and other medicines extolled as specifics produced no effect.

When therefore, an hiccup arises from the same causes with a nausea and vomiting, it is to be cured by the same measures. If it proceeds from too sudden a depletion, which as *Sydenham* in the part last quoted, observes, often happens to old persons after

violent diarrhæas, and especially vomitings; these evacuations ought to be checked, and the loss repaired by the exhibition of mild liquors. But if it proceeds from an excessive repletion, evacuants are most proper and beneficial.

An hiccup is also frequently produced, when the interior surface of the oesophagus is irritated by an excessive load of aliments, or drink, suddenly swallowed down. Thus voracious children, who quickly devour sweet-meats, or other delicate food they have stolen, are generally seized with an hiccup. The like accident frequently happens, upon the deglutition of acrid substances. But the most frequent and uneasy hiccup, arises from aphthæ in the oesophagus. And sometimes the approach of such pustules may be prognosticated from a beginning hiccup, before they appear on the fauces, and internal parts of the mouth. But when the aphthæ fall off, we see the tongue and fauces excoriated, and they are afflicted with pain, if any substance in the least touches them. A similar pain is on such an occasion produced in the internal surface of the oesophagus, and every thing swallowed, the saliva not excepted, gives rise to a most painful hiccup. For the cure of which, nothing is hitherto found more effectual, than swallowing every hour a small quantity of recently expressed oil of sweet almonds, which by its mild quality alleviates the pain of the excoriated oesophagus.

FEBRILE DEBILITY

660. **G**REAT debility arises from an impediment to the influx of the nervous fluid into, and its pressure upon the muscles.

661. The impediment may arise from an emptiness of the canals, when the fluid they should convey is exhausted; or an immeability of the fluid; or an obstruction, or compression of the canals, especially near their

their origins in the cerebrum, or cerebellum; or a weakness of the heart, thus rendered incapable of furnishing the brain with a quantity of blood, sufficient for the due secretion of the nervous fluid.

162. That the impediment to the influx of the nervous fluid into, and the consequent weakness, arise from the emptiness of the vessels, is known from the long duration of the disease they accompany or succeed; from morbose or artificial hæmorrhages, sweats; a diabetes; salivation; or diarrhæa; from a defect of aliment, with respect to its being taken in, its retention, digestion, and conveyance to the blood, from paleness, a smallness of the pulse, collapsed vessels, and flaccid muscles.

663. That it arises from an immeability of the fluid may be distinguished from what has been said, (69, 70, 71, 72, 73, 74).

964. That it is caused by obstructions may be known from the doctrine of obstructions, (107 to 144).

665. We distinguish that a compression of the cerebrum and cerebellum is the cause of dibility when we perceive those functions injured, which depend upon the integrity of these organs; as in case of deliriums, profound sleep, tremor, vertigo, and ringing in the ears.

666. That debility arises from a weakness of the heart, is known by the signs of a languid and deficient circulation, (106).

667. Liquid Aliments, nearly approaching the nature of the blood, which are previously digested by art, gelatinous and mild, and artfully impregnated with vinous and aromatic substances, if exhibited frequently, and in small quantities at a time, serve excellently to fill the exhausted vessels, gentle frictions of the extremities being used at the same time; particularly if these are prepared of proper materials, opposite to the nature of the disease.

Among these aliments are the broths made of beef, veal, mutton, and fowls, of the gallinaceous kind, either separate, or mixed together, with the addition of salt, and lemon-juice; new milk, and the decoction of bread mentioned (28. N. 1.)

668. That species of dibility arising from an immeasurability of the fluid, (663) is to be cured by the methods recommended (75 and 132 to 137). For nothing else can be of any service in this case.

669. That caused by the obstruction of the canals (664) is to be relieved by the methods (from 124 to 144).

670. That species which arises from a compression of the cerebrum, and cerebellum (665), is generally cured by such applications to the part affected, as are capable of removing the impacted obstructing matter (from 124, to 144) and of driving the force thereof to other remote parts. The nostrils therefore, head, face, mouth, and neck, are to be moistened with mild fomentations; and epispasties are to be applied to the feet.

671. The dibilated heart usually recovers strength very slowly: but the general methods of removing dibility, recommended above (667 to 671) may do some service.

672. Hence (660, and 672) we learn how rarely the use of cardiac medicines in acute disorders is understood: and how it happens, that dibility in fevers is frequently an insuperable symptom.

No remedy, however much celebrated, can be absolutely called a cordial, or a restorer of the strength in acute fevers, since the benefit or injury of such medicines depend entirely on the various causes of the weakness. In the beginning of acute disorders, a sudden weakness arises sometimes either from a redundancy, or rarefaction of the blood, distending the vessels, or from a want of a due circulation of the fluids. In this case the only cordial medicines are

are such as diminish the quantity of the blood, or lessen that impetus, by which the infracted vessels are acted upon by it. Hence venesection often rouses the drooping strength in the beginning of diseases, whereas in the end it would prove highly injurious. On the contrary, those medicines which in the end of acute diseases, by their greatful stimulus augment the languid motion of the blood, and the separation of the morbid matter depending on it, would infallibly augment the weakness which attends the beginning of these diseases. Those medicines, which are proper for repairing the strength after violent evacuations, would prove hurtful, unless such evacuations had preceded. After those acute diseases in which the impetus of the blood is generally determined to the head, the remaining weakness, even after the violence of the disease is subdued, can hardly bear stimulating cardials, but is safely cured by time without the use of any measures. Hence it is obvious, how great attention is requisite to determine, whether cardials are to be used, and which of them are requisite in the cure of acute disorders; so that the use of such medicines is rarely understood in diseases of this kind. Thus *Hippocrates* in *lib. de diæta acutor. Charter.* Tom. 2. tells us, "That few physicians were so skilful, as
" to distinguish those weaknesses, which proceed
" from an inanition of the vessels, any other irritating cause, or the height of the distempers, and
" what disorders together with their different species, are peculiar to each constitution, though a
" a knowledge of these things is of great importance for the recovery of health." Some physicians, especially those who practise in courts, are often exposed to great inconveniences, when stimulating cardials are taken by the patient, under the specious title of alexiplarms, which however prove very hurtful; whereas if the termination of these

treacherous disorders should prove unlucky, and if these medicines should not be exhibited, the physicians are blamed as if they had neglected the most efficacious remedies; for when in the beginning of acute diseases, the patient's strength is exhausted, unskilful persons ascribe the misfortune to the malignity of the disease, and order the strength to be repaired by cardiacs, to the great detriment of the patient. Accordingly Sydenham in *Scedul Monitor. de Novæ Febris ingressu*, speaks in the following manner, "The notion or even the simple name of malignity has proved more destructive to mankind, than the invention of gunpowder, since the fevers are principally malignant, in which a preternatural degree of inflammation is observed." For this reason, Sydenham so often condemns the pernicious and preposterous use of cardiacs.

Weakness is an insurmountable misfortune, when the causes of it cannot be removed, which frequently happens. When the body is exhausted by evacuations which cannot be stopped; such as colliquative sweats in a confirmed phthisis, or a diarrhæa, which generally happens in the end of that disorder, the most celebrated cardiacs are exhibited to no purpose. If a tenacious dense and inflammatory blood, is by the violent impetus of the fever, so impacted in the tender vessels of the brain, that it cannot be resolved, nothing will be sufficient to remove the weakness arising from this cause. If by the force of the fever, the arteries running through the ventricles of the brain should break and discharge their contained blood, which by its bulk compresses the adjacent parts, all means of relief will prove ineffectual. But that this may happen in fevers is sufficiently obvious, since the stronger arteries in the nostrils, or even those of the lungs, or kidneys, are so frequently ruptured in acute disorders, in consequence of which a most dangerous spitting of blood, or a discharge of bloody urine are

are produced. By a distension also of the blood-vessels of the brain, the trunks of the nerves being long compressed in their origin, often remain imperious, during the rest of the patient's life, because either their contiguous sides grow together, or because they are dried in consequence of no fluid passing through them. Incurable deafness, cataracts, loss of memory, and stupidity, which remain ever after, are justly to be dreaded after acute disorders of the head.

FEBRILE HEAT.

673. **E**Xternal febrile heat may be determined by a thermometer; internal, by the sensation of the patient, and redness of the urine.

674. A greater quantity of fire is always present in that part which is most hot.

675. This increased quantity of fire arises from a more violent attrition of the fluid parts of the body, on each other, and on the vessels, and of the vessels reciprocally on these.

676. This violent attrition is caused by a strong motion of the fluids from the heart, and a great resistance of the vessels to the force of the heart.

677. This motion is to be estimated by the density of the blood, impelled from the heart, and its velocity through the vessels.

678. The density of the blood is known by examining the blood taken out of the vessels; by a preceeding dissipation of the fluid parts; and by hardness of the pulse.

679. The velocity may be calculated from the number of pulsations of the heart, compared with the magnitude of these pulsations.

680. The great resistance is to be known by the bulk of the inert fluids to be moved, and from the paucity, narrowness, and immobility of the canals, which transmit them.

681. The bulk of the fluids is perceived by the signs of a plethora (106), or cacochymia; or by a sudden solution of these liquids, which before were in a state of stagnation, as of the fat; but principally by an inflation of the veins, together with a strong motion of the arteries.

682. The paucity of vessels is to be learned from the history of obstructions (107 to 124), or of wounds. (145 to 331).

683. The narrowness of the vessels is known by the sight, the touch, a dry temperament, and a great increase of heat, upon a very small degree of motion.

684. The immobility of the canals, which resist their dilatation, is learned from all the signs of a rigidity of the fibres, vessels, and viscera. (32, 33, 34, 50, 51, 52, 53.)

685. Upon so many proximate causes (674 to 685), depends the origin of febrile heat; which however, may have a great variety of other remote causes.

686. But heat may be increased, by an increase of one of these causes only; and, in this case, the increase of heat is in proportion to the cause.

687. But if two of the causes are, at the same time increased, the heat is as the product of the increases of the causes, multiplied by each other.

688. And this method of calculating will hold, with respect to the concurrence of more causes.

689. An increased heat dissipates the most liquid parts of the blood, that is the water, spirit, salt, and most subtil oils, dries and condenses the rest of the mass, and causes it to concrete into an immoveable, irresoluble substance; disengages, attenuates, renders acrid, exhales, and moves the salts and oils: hence the smallest vessels are fretted and broken; the fibres are rendered dry, rigid, and contracted; and hence many acute, dangerous and fatal diseases are produced, which may be accounted for, from what has been said relative to heat.

690. From

690. From this doctrine we learn, what is required to mitigate heat; and how various the remedies are, which tend thereto.

691. Thus if an increased velocity of the blood alone excites heat, the remedy is, whatever diminishes the velocity: the principal of these are, rest of the muscles, and of the mind; venesection; a slight compression of the veins in the limbs, continued a very short time, by ligatures, a gradual and cautious Application of cold substances, both externally and internally, and preparations of the poppy prudently exhibited.

692. If heat arises from the density of the fluids, it is cured by those remedies mentioned above, which diminish the velocity (691), and by drinking water, and oxymell, and such medicines as relax the vessels.

693. The bulk of the fluids, in a plethora, is easily diminished (106, 6); but in a cacochymia, the diminution is to be brought about by evacuating slowly, and at intervals; but when the fat, which is before stagnant, is resolved, the greatest difficulty arises in this case, aqueous fluids, impregnated with an acid honey, the yolks of eggs, or sugar, together with perpetually continued evacuants, are of the utmost importance, because they render the fat, or oil miscible with the blood.

694. The cure of heat excited by obstruction, may be learned from (125 to 144); and that part of the doctrine of wounds, which treats of the accidents supervening upon wounds, attended with the loss of substance.

695. If heat depends upon the narrowness of the vessels (683), they are to be dilated by relaxing remedies (See 54.)

696. And heat arising from a rigidity of the vessels is removed by the same remedies as above described (54.)

697. The

697. But as often as an excess of heat is excited by a combination of causes, it is to be removed by a combination of the remedies described from 690 to 697.

698. From all this doctrine of heat (673 to 698), we learn, that a fever, attended with excessive heat, is acute, quick in its progress, putrid, and if there is the greatest degree of heat, pestilential: why the heat of a bed, of air confined, of regimen and medicines, must necessarily be, in such cases, extremely prejudicial, and why heat about the heart and hypochondria is of fatal presage.

699. From this doctrine also, the origin, nature, and effects of dryness may be understood; and the cure may hence be learned, which consists in the exhibition of drinks, fomentations, baths, clysters, and gargarisms, which are aqueous, somewhat acid impregnated with honey, and relaxing.

FEBRILE DELIRIUM.

700. **A** Delirium is a production of ideas, not corresponding to external causes, but excited by the internal disposition of the brain, whilst the judgment is conformable to such ideas, and the affections of the mind, and motions of the body, correspond therewith: and these, either alone, or combined, form various species of deliriums.

701. It always, therefore, witnesses a morbose affection of the medullary part of the brain; which may arise from any kind of obstruction, from an impediment to the influx, transflux, or efflux of the fluids through the brain; from a violent velocity, or stagnation of the liquids, and many other causes, which must be investigated with the utmost diligence, in order to acquire a just knowledge of the method of cure.

702. For various remedies, and methods of cure, must be adapted to the various causes (701); among which

which the principal are baths for the feet; epispastics applied to the feet and legs, and frictions of these parts; diluting clysters frequently administered, a thin diet, sedative, deobstruent, and diluting potions; emollient applications to the head; gentle anodynes; bleeding in the feet; and exciting the hæmorrhoidal, or menstrual flux.

A FEBRILE COMA.

703. **A** Coma is a perpetual inclination to sleep in a fever, either with or without sleep; and always witnesses such a state of the brain, as prevents the exercise of the senses, and animal motions. It may arise from a deficiency of the arterial fluid conveyed to the brain; from an impediment to its circulation through the brain; from an impediment to the secretion of the nervous fluid from the blood; or from whatever prevents the flux and reflux of the spirits through the nerves.

704. Hence various, and those often different, and even contrary causes may produce this symptom, in a fever; as all violent evacuations, or repletions, all glutinous, pinguious, or inflammatory inspissations of the blood; all causes of what kind soever may excite a compression of the brain, which may also have the same effect, if they act upon the nerves.

705. Hence appears the necessity a physician is under of investigating the particular cause of a coma, before he can determine what remedies are to be applied, and in what manner: for, frequently, quite contrary methods are required; and it often happens, that a coma obstinate to all remedies, ceases spontaneously, when the concoction of the fever is completed.

706. Those remedies, however, recommended above (702) in a delirium, are proper in this case; especially fomentations applied to the head and neck.

707. But

707. But if there are signs of a great inflammation, it must be treated as an original disease.

A FEBRILE PERVIGILIUM, OR OBSTINATE WATCHING.

708. **A** Pervigilium, or obstinate want of sleep, is the direct contrary to a coma (703); whence its nature may be understood: it is caused by the first tendency to a slight inflammation of the brain; an increase of which often excites a coma.

709. It is cured by rest of the muscles; calmness of mind, the absence of all objects of sense; moderate cold, a moist air; mild and emollient aliments; a gentle, continual, grateful, agreeable, ringing, hushing murmur, farinaceous, subuleous, moistening, and demulcent medicines; the smell of soporiferous vegetables; and the prudent use of anodynes, pargorics, soporiferous remedies, and narcotics; always premising those remedies, which are capable of checking and curing the inflammation.

FEBRILE CONVULSIONS.

710. **A** Convulsion (230 to 239), in a fever is always excited by some injury done to the brain, either by vellications conveyed to it by the nerves from the inferior parts (627, 631, 632, 633, 642, 648, 649, 652, 653, 654), or from an inordinate appulse, transflux, or egress of the liquid secreted in the brain; which may arise from every cause, capable of exciting a delirium, coma, or obstinate watching (701, 702, 705, 704, 708): and on this account, there is a great variety in the ætiology and cure.

711. If it continues long, it easily affects the entire nervous system; whence fatal disorders are excited.

711. If

712. If convulsions succeed the signs of an inflammation of the brain, they are generally fatal symptoms.

If a discharge of thick urine is succeeded by one of the aqueous and pellucid kind, and convulsions immediately follow, it is the worst of symptoms.

If convulsions arise in fevers, after profuse evacuations, they generally prove fatal; as do those also, which are accompanied by a perpetual delirium.

713. In order to a cure, the particular cause (710), is, first, to be investigated, and the part affected must be discovered, whence the convulsions primarily arose (710); then medicines are immediately to be applied, which are capable of correcting acrimony, of resolving the impacted matter, and relaxing the parts which are contracted. We are, therefore, to attempt the cure of convulsions, by diluting, relaxing, making revulsion, and lenifying, never trusting to the specious character of antispasmodics.

714. But if the head is found to be primarily affected, recourse must be had to the methods of cure, recommended above (706), in case of a delirium and coma.

FEBRILE SWEATS.

715. **A** Sweat in the beginning of an acute fever, whose cause is somewhat obstinate, arises from a lax debility of the extreme vessels, a vehement circulation, and a ready separation of the aqueous particles, from the other principles of the blood.

716. If it perseveres, it deprives the blood of its fluid parts, inspissates the remainder, and causes fatal obstructions, it being afterwards almost impossible to dilute, or resolve the blood: Hence almost every kind of acute disease may be produced.

717. These sweats are, therefore, always to be restrained in the beginning, unless it is certain, that the matter,

matter, which excites the disease, is sufficiently thin to be carried off, together with the first sweats.

718. Sweat is checked by rising out of bed, and sitting up; by avoiding too many integuments; by admitting the cool air; by abstaining from warm and heating medicines; by using copious draughts of mild, soft and cool liquors; that the loss of what is dissipated may be quickly repaired; and by checking the violence of the circulation (102 to 106)

A FEBRILE DIARRHŒA.

719. **T**HE matter of a diarrhœa, is the mucus, lymph, glutinous matter, pus, sanies or blood from the nose, mouth, fauces, œsophagus, stomach, liver, gall-bladder, pancreas, intestines and mesentery: it arises from too great an expulsive force of these substances into the intestines, and a weakness of the contracting force of the intestines, or from some obstruction of the absorbing vessels of the intestines, which prevents the admission of what ought to pass through them.

720. Hence it appears, that fluxes of the belly in fevers are of various kinds, with respect to the matter, cause, effect, and event; they are, therefore, sometimes utterly incurable; and sometimes colliquative, in which case they seldom admit of a remedy.

721. If a diarrhœa perseveres long, it disposes the abdominal viscera more and more to the same disorder; weakens them, excoriates and inflames them; empties and exhausts the other vessels and viscera: hence arise an atrophy, emaciation, weakness, a dysentery, an inspissation of the fluids throughout the whole habit of the body; a laxity of the solids; a loss of the fluids; a leucophlegmatia; dropfy, and tabes.

722. The cure is performed by destroying the acrimony, which irritates the intestines, and by expelling it by means of emetics, purges and clysters; by corroborating

roborating the relaxed parts ; by mitigating the violence of the diarrhæa with narcotics ; by determining the morbose matter to some other excretion, as those by sweat and urine ; by diminishing the cause ; and correcting it at the original fountain.

FEBRILE ERUPTIONS.

723. **T**HE matter of inflammatory pustules, is, generally, something which cannot pass the cutaneous vessels, but sticks therein ; and they are excited by the force of the circulatory, secretory and excretory vital powers. Hence eruptions are various, according to the variety of causes, which produce them ; and on this account fevers acquire different appellations from the different eruptions with which they are attended, as erysipelatous, scarlet, red petechial, purple petechial, morbillose and variolose.

724. It is customary to treat of the last three separately : as for the three first, the diagnostics and prognostics are easily found.

725. The cure is not difficult ; for it only requires, that the eruptive matter be kept in a moveable state, by the exhibition of a sufficient quantity of light fluids, and preserving a due moderation of the vital powers ; for, by this means, they soon come to a period, with a desquamation of the cuticle.

726. The other febrile symptoms, which are similar to these, and of the like kind, require the same treatment as the diseases on which they depend.

727. Hence we learn what judgment is to be formed of the variety of acute fevers ; for those in which the febrile motion, when once began, is continued equally to the end, are called continual fevers ; those in which the febrile force remits, and is again exasperated alternately, in such a manner, however, that the fever never ceases, are called continual remittent fevers. Those, lastly, which remit so entirely, that the patient is absolutely free from a fever, in the

intervals betwixt the paroxysms, are called intermittents.

Continual FEVERS.

728. **T**HE most simple of continual fevers, is an ephamera, or diary fever, which goes thro' the different stages, as the beginning, increase, state, and declension, in the space of twenty four hours. It arises from a more vehement motion only, excited by some error with respect to the non-naturals; and has scarcely any material cause. It is distinguished by the slightness of the cause; the purity of the body; the mildness of the symptoms; the expeditious crisis; and a restoration of the pulse to its natural state, immediately upon the cessation of the fever. The cure is easily performed, by abstinence, rest, and diluting medicines.

729. If this species of fever (728) continues many days, it is called a continual, but not putrid fever. The causes, signs, and cure, are the same with those of the ephamera; but it requires particularly copious bleeding, and refrigerating medicines.

A continual putrid FEVER.

730. **T**HAT species of fever, which is called a putrid synochus, arises from causes somewhat greater than a simple inflammation; an obstruction of the viscera; an oppilation of the skin, and almost all the capillaries; and a considerable degree of acrimony.

731. It is known by a degree of heat which is pungent to the touch; a febrile, but unequal and irregular pulse; urine which is thick, red, and turbid, without a regular sediment; and by an hot and sanguineous temperament, age, and habit of the patient.

732. This fever is distinguished by the name *Homotenes*, when it preserves the same tenor through all

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all its stages, neither increasing nor diminishing: when it perpetually increases, it is called *Epacma*stica, or *Anabatica*; but when it continues perpetually to decline, it acquires the title of *Paracma*stica.

733. Of these the first species is esteemed salutary; the second the worst; and the third better.

734. This fever (730) are esteemed the more dangerous and fatal, in proportion as the pulse is more weak, frequent, unequal, with respect to strength, inordinate with respect to time, and intermittent; as the respiration is more difficult, frequent, and laborious, the more the pinnæ of the nostrils are agitated, the more pain it excites about the vital parts; and the more inordinate it is, the more vehemently a sensation of lassitude and weakness is perceived; the more frequently the patient changes his posture of lying, tosses about, and lies on his back, with his limbs extended; the more the rational faculties and affections are injured; the more the appetite is impaired, the digestion difficult, the urine red, thick, and turbid; or pale, watery, discharged in small quantities, and difficultly retained; the more tremulous motions are perceived in the patient; the more he starts from the touch; the more he trifles, and fumbles with his hands; and the more he picks the naps of the bed-cloths; the more ghastly his eyes appear; and the more moist they are with involuntary tears: for these are all very bad symptoms.

735. But when sleep is laborious and difficult, and affords no relief; when purple or livid eruptions appear on the body; when the hypochondria are tense and inflated, the patient generally dies.

736. The cure delivered above is to be varied, according to the variety of indications, the violence of the symptoms, the condition of the patient, and the stage of the fever; and, therefore, does not require to be particularly treated of.

737. The ancients called these fevers *εὐνοχοί*, and the Schools, *Continentes*; because in them is no remission of

heat: but continual remittent fevers, the ancients called *συνεχὲς* in *Latin Continuæ* (727.)

A CAUSUS, OR ARDENT FEVER.

738. **A**Mong these fevers, we may justly reckon the *Causus*, or burning fever, on account of its frequency, danger, and difficulty of cure.

739. The primary symptoms of this disorder, are an heat almost burning to the touch, unequal in different parts of the body, most intense in the vital parts (but more mild towards the extremities, which are sometimes cold) and rendering the breath intensely hot, a dryness in the whole skin, nostrils, mouth, and tongue; a dense, difficult, and quick respiration; a dry, yellow, black, parched, and rough tongue; an insatiable thirst often suddenly removed; a loathing of the aliments, a nausea and vomiting; the greatest anxiety, inquietude, and weariness; a gentle cough, and a shrill voice; a delirium, phrenitis, obstinate watching, coma, convulsions, and exacerbations on the odd days.

740. The causes of a burning fever may be excessive labour; long journeys; the heat of the sun; thirst long endured, the use of heating, fermented, aromatic, and acrid substances; excessive venery; and immoderate weariness, especially in the summer.

741. This is the progress of this disease: on the third and fourth day, it often proves mortal; and, if it is violent, rarely exceeds the seventh, without putting an end to the patient's life. It is frequently terminated by an hæmorrhage (which, if it is small on the third or fourth day, is a mortal sign) which may be predicted by the pain of the neck, the heaviness of the temples, a distension of the præcordia without a sense of pain, a spontaneous discharge of tears, without any other mortal sign, a redness of the face, an itching of the nostrils; and this hæmorrhage is most salutary on the critical day, on which the fever is also terminated, by vomit, stool, sweat, urine, and the expectoration of a thick matter: if
the

the exacerbation of the fit happens before the sixth day, it is a very bad symptom; black and thin urine, discharged in a small quantity, is, in this disorder, a mortal sign; as also a spitting of blood, and a discharge of bloody urine; an injured deglutition is a bad sign; and a refrigeration of the extremities, among the worst of symptoms; a redness and sweating of the face, is also a bad sign; and an inflammation of the parotid glands, which does not come to suppuration, proves mortal: an excessive flux, is, in this disorder, also mortal: this species of disorder, when accompanied with a tremor, terminates in a delirium, and then in death; it also terminates in a peripneumony, often accompanied with a delirium: that species of burning fever, which arises after violent gripes of the belly, is of the worst kind; it is critically terminated by a rigor.

742. From these signs the disorder is easily known to be present, nor can its proximate cause be mistaken; for it arises from the blood's being deprived of its milder and more liquid parts, by an inflammation through the whole of the body, whilst the strength of the patient is vigorous. Hence, also, sure prognostics may be made with respect to the termination of this species of fevers.

743. The cure of a burning fever, requires a pure cold air, frequently renewed; cloaths, which by no means suffocate or burden the patient; a frequent erect posture of the body; large quantities of mild, demulcent, subacid, aqueous, and warm liquors used as drink, light farinaceous foods prepared of barley, oats, and subacid fruits; venesection, if the disease is in the beginning, if the marks of a plethora appear, if there are signs of a considerable inflammation, if the heat is intolerable, the rarefaction of the fluids excessive, a revulsion necessary, and the symptoms so violent, that they cannot be easily removed by any other remedy; the injection of mild, diluting, laxative, antiphlogistic, and refrigerating clysters to be repeated as the heat, costiveness, and revulsion re-

quire; humectation of the whole body, by drawing into the nostrils a mild air, impregnated with the steam of warm water, by washing the mouth and throat, by bathing the hands and feet with tepid water, and by fomenting with warm sponges, the places where most vessels are exposed to the touch; aqueous, mild, nitrous, gratefully acid, and gently laxative substances; together with such as supply the matter of the urine, and without any acrimony, by their quantity, afford a vehicle for the sweat; such as remove contractions of the fibres, resolve and dilute the thickness of the humours, and, at the same time, correct their Acrimony.

744. To these, if we add what has been said in the general rules relating to the cure of acute disorders, and their symptoms, and the doctrine of each particular acute disease, arising from the affection of each of the viscera, to be found under their respective articles, he shall clearly understand what remedies are proper for the cure of any burning fever.

745. Besides, from what has been said, all other particular acute fevers, may be understood, since they may either be referred to particular symptoms, or are the effects of some other disorder.

INTERMITTENT FEVERS.

746. **W**E have already given the definition of an intermittent fever (727, 337), the diagnostics of which are obvious, and its distinction into various classes easy, since these depend only on the difference of time in the returns of the paroxysms.

747. But it is to be observed, that intermittent fevers, in general, are either vernal, and rage from *February* till *August*; or autumnal, and rage from *August* till *February*; which distinction is necessary on account of the various conditions, symptoms, terminations, durations, and cures of different intermittents; besides, one intermittent fever, sometimes removes another.

748. In-

748. Intermittent fevers, in the beginning of the autumn, often resemble those of the continual kind, on account of their longer and redoubled paroxysms, whereas their nature and cure are widely different.

749. Fevers of this kind begin with an oscitation, pandiculation, weariness, weakness, cold, horror, rigor, tremor, and paleness of the extremities, a difficult respiration, an anxiety, a nausea, a vomiting, and a quick, weak and slow pulse. The more violent and numerous these symptoms are, the worse the fever is; and afterwards the heat, and other symptoms are the worse. This is the first stage of intermittent fevers, which corresponds to the increase of continual fevers, and is of all the other stages the most dangerous; for, in this condition, the urine is generally crude and thin.

750. This stage (749), of intermittent fevers is succeeded by another, which begins with heat, redness, a strong, large, and free respiration, a small anxiety, a large strong pulse, an excessive thirst, and a pain of the limbs and head, and generally a redness of the urine: this stage corresponds to the state or height of continual fevers.

751. Then, last of all, there generally appears a profuse sweat, a remission of all the symptoms, a thick urine, with a sediment resembling brick-dust, sleep, a total absence of the fever, lassitude and weakness.

752. Intermittent fevers frequently terminate in those of the acute and dangerous kind, which is generally owing to an excessive heat, and too brisk a motion of the fluids.

753. Intermittent fevers, running through their three different stages (749, 750, 751), greatly injure the minute fibres of the vessels and viscera, by producing stagnations, obstructions, coagulations, impulsions, resolutions, and attenuations of the fluids: hence the vessels are weakened, and the fluids become morbid, especially in that species of the disease, in

which their parts are less assimilated, and not duly mixed, by which circumstances in conjunction, an acrimonious state of the juices is produced. Hence all these things concurring produce an easy propensity to sweat, which greatly weakens the patient, since, sometimes, the viscid part of the blood transpires. In this situation of the patient, the urine is surprisngly thick, turbid, pinguious, like that of horses, or like saliva. Hence the weak, resolved, and hardly coherent blood, being deprived of its best parts, is at once acrid and thick, so that, in consequence of the laxity of the vessels, and the acrimony of the humours, those long-continued fevers, terminate in chronical disorders, such as a scurvy, a dropsy, a leucophlegmatia, scirrhus tumors of the abdomen, and the several misfortunes produced by these.

754. But if intermittent fevers are not of the malignant kind (754), they dispose the patient to longevity, and cleanse the body from inveterate disorders.

755. Hence, after an accurate examination of the whole history of intermittents, (746 to 755), their proximate cause seems to be a viscosity of the arterial blood upon the accession of any cause, which produces a brisk and strong contraction of the heart, and a resolution of the stagnant fluids.

756. Since, therefore, this order (749, 750, 751), is always observed in intermittents, the physician who can surmount the first approach (749), and the primary cause (755), may by that means remove the whole ensuing paroxysm.

757. Besides, as an infinite number of causes, and these not very considerable, may produce the first stage (749), of a perfectly intermittent fever, (727, 737) and its cause (755); and as many such causes may be produced, increased and fomented, in all the fluids, formed and secreted in the human body, it is more difficult to distinguish the cause already formed from infinite possible circumstances, than to invent one possible cause, sufficient from the laws of the animal œconomy,

œconomy to account for the stated periods of intermittents. This is sufficiently obvious to every accurate inquirer.

758. The cure, therefore, requires, that we should use aperients, saline, alkaline, aromatic, mineral, diluting; mild and oleous substances, heat, motion, fomentation, and friction, during the intermission, or in the first stage (749).

The medicines of this kind are all *Tachenius's* salts of herbs, the most considerable of which are obtained from wormwood, carduus benedictus and stalks of beans; nitre, antimoniated nitre, diaphoretic antimony unwashed; sal ammoniac, sal prunellæ, and sal Polychrestus, tartarus regeneratus; tartarus tartarificatus; salt of tartar reduced to a saponaceous mass with oil of turpentine; and all the parts of all the aromatic herbs, especially of those which are resolvent. See (75 N. 5, and 54. N. 4).

759. In order to purge the *primæ viæ* from the redundant fordes, a purge, or a vomit, are often very beneficial, exhibiting either so long before the paroxysm, that its operation may be over before the fit comes on. That this method is to be taken, may be known from the patient's way of living, preceding diseases and symptoms; a nausea, a vomiting, eructations, tumors, the breath, the fordes of the tongue, throat, and palate, want of appetite, bitterness of the mouth, and a vertigo accompanied with dimness of sight; and, after the operation, the tumultuous commotion of the fluids is to be allayed by an opiate before the paroxysm. Thus,

Take of emetic tartar, five grains, reduced to a powder; to be taken at one dose.

Or,

Take of emetic tartar five grains; and of the crumbs of bread, a sufficient quantity, to make five pills; to be taken for one dose:

Or,

Take of emetic wine two ounces; and of oxymel of squills six drams; mix up for a draught:

Or,

Take of emetic tartar five grains; rob of currans, half an ounce; and oil of cinnamon one drop: make into a bolus.

Forms of purges are these following.

Take of the pulvis cornachini two scruples for a dose:

Or,

Take of the pillulæ cochiae majores two scruples; of solutive syrup of roses half an ounce; and of distilled elder-flowers two ounces: mix for a draught:

Or,

Take of washed aloes twelve grains; of myrrh ten grains; of opopanax five grains; and of sal gemmæ five grains: mix and make up into nine pills.

760. These (759), are beneficial, when by their stimulus they operate both ways (759).

761. But otherwise they prove injurious (759) when they weaken, evacuate the most liquid parts of the juices, and disturb the necessary digestions; and thus either protract the disease, or bring on death. The cold and hot fits, are often removed by sudorifics, whilst a few hours before the known time of the paroxysm, after filling the patient's body with an aperient, diluting, and gentle narcotic liquor, an hour before the paroxysm, a sweat is excited, and continued till two hours after the paroxysm usually began.

Take

Take of *sal polychrestum*, two drams; of the syrup of the five aperient roots, two ounces; of pure opium, two grains; of the distilled fermented waters of *carduus benedictus*, wormwood, rue, marjoram, and mint, each one ounce; and of the extract of wormwood, two ounces: mix all together, and let the patient take one spoonful, every quarter of an hour, drinking after each four ounces of the following decoction.

Take of the root of *masterwort*, six drams; of the roots of *sassafras*, and red sanders, each two ounces; of the leaves of *golden-rod*, two handfuls; of the leaves of the *lesser centaury*, half an ounce; and of the bruised seeds of *candy carrot*, six drams; infuse for two hours in a close stoppt vessel, without boiling, though very hot: then let them boil a little, and exhibit two pints of the decoction for a dose.

762. Venesection, considered in itself, is always pernicious, though it may prove accidentally beneficial, as also a light and exactly regulated diet.

763. When intermittent fevers are in the second stage, (750) aqueous substances actually warm, mixed with subacid aperient, nitrous ingredients, or preparations of succory, and other mild substances of a similar nature, are indicated, whilst the patient is to be kept in a state of rest, and moderate warmth. The medicines before recommended in a febrile anxiety and thirst are to be used in this stage of intermittents. See (634, 640).

764. When the paroxysm is terminated by a crisis (751), then it is expedient to supply the matter of sweat and urine, by vinous ptisans, broths prepared with flesh, and temperate decoctions: thus those two excretions are to be excited, not by the force of heat, medicines,

medicines, or bed-cloaths; but gently promoted by an increased quantity of these substances long persisted in.

765. Violent symptoms are to be removed by the rules laid down from (617 to 726) for the cure of febrile symptoms in general.

766. When the fever is removed, the patient is to have his strength restored by analeptic aliments, and corroborating medicines; then after his strength is increased, he is to be purged several times.

767. But if an autumnal intermittent fever is very violent, if the patient is weakened by the disease; if the disorder is of a considerable standing; if there are no signs of an internal inflammation, nor of pus collected any-where, nor of a considerable obstruction of any of the viscera, the disorder is to be removed by the *peruvian* bark, exhibited in the form of a powder, an infusion, an extract, a decoction or a syrup, with proper specifics, during the intermission, in a due order, a proper dose, and in conjunction with a proper regimen. For this purpose,

Take of the *peruvian* bark, one ounce: reduce to a powder, to be divided into twelve doses; one of which is to be taken by the patient every hour in Wine:

Or,

Take of *peruvian* bark, three ounces; and common water, twelve ounces: infuse for two hours; then boil for an hour; and add four ounces of *French* wine: then let the whole boil a little longer in a tall vessel; and of this decoction, when pure, let the patient take one ounce and an half every two hours:

Or,

Inspissate the preceding decoction to the consistence of honey, and divide into four doses, one of which is to be taken every two hours:

Or,

Or,

Take the preceding extract, dilute in one ounce of the syrup of the five aperient roots: make a syrup to be used in the same manner with the extract:

Or,

Take the preceding extract, mix with it a sufficient quantity of the powder of liquorice, and reduce to a mass of pills, of which the patient is to take four rains, during the intermission.

768. Epithems are, also, frequently beneficial, as also unctions of the spine of the back, and the drinking astringent liquors. Thus,

Take of the oils of scorpions, castor, juniper-berries, camphire obtained from the root of the cinnamon-tree, bays and turpentine, and of the terebinthinated balsam of sulphur, each half an ounce: mix for a liniment.

Take of the whole of the broad leaved plantain, ten ounces; and of recent tormentil-root, two ounces: boil in two pints of water; and let the patient drink three ounces of the decoction every two hours.

Take of roch-alum, one dram; of nutmeg, two drams; and of the powder of *armenian* bole, twelve grains: reduce to a powder, to be taken an hour before the paroxysm.

Epithems for the wrists may be prepared in the following manner.

Take of currans, and hops, each two ounces; and reduce to a poultice, to be applied to the wrists.

Or,

Or,

Take of the tops of green rue, two ounces; and of mustard-seeds, two drams: bruise, and apply to the wrists.

769. That the cure of particular intermittents may be understood, it is to be observed, first, that the shorter the intervals of true intermittents are, the sooner they are cured; and the longer the intervals are, the more time is required to their cure. Secondly, that, for this reason, they approach much to the nature of acute fevers, and are sometimes converted into them. Thirdly, that, for this reason, their cause is more moveable, though more copious. Fourthly, that vernal intermittents, upon the approach of warm weather, are spontaneously terminated. Fifthly, that autumnal intermittents, on the approach of cold weather, are increased. Hence it is obvious what fevers are curable, and by what medicines.

ACUTE FEBRILE DISORDERS.

770. **W**E now come to consider these acute disorders, which though accompanied with acute fever, yet induce an inflammation of particular organs, from the injured functions of which, these diseases receive their respective names. Of this kind are a phrenitis, a coma, a carus, a quinsey, a peripneumony, a spitting of blood, a pleurisy, an inflammation of the breast, diaphragm, stomach, liver, mesentery, and intestines; a dysentery; the iliac passion, gripes, a tenesmus, the hemorrhoids and a bilious colic. An inflammation of the kidneys, bladder, ureters, and of the external parts in the measles and small-pox.

A PHRENITIS.

771. **W**hen a violent and perpetual delirium arises from a primary disorder of the brain, accompanied with a continual fever; it is called a true phrenitis.

When a phrenitis arises from a disorder communicated to the brain, from some other parts in fevers, and inflammations, it is called, a symptomatic phrenitis, a disorder which corresponds to the Greek word *παραφρεσύνη*, the Latin *desipientia*.

772. A true phrenitis is preceded by heat; a violent and inflammatory pain of the head; a redundancy of blood; an inflammatory disposition; a redness of the eyes, and turbulent sleeps; a slight degree of folly, youth, the use of hot substances, remaining in the sun; haughtiness, or fierceness; sudden forgetfulness; a dryness of all the parts, and especially of the brain; and picking the knaps of the bedcloaths.

A symptomatic phrenitis is preceded by almost every acute disease, accompanied with a fever, as a pain of the side, which is not pleuritic but accompanied with a slight perturbation of mind, and inflammation of the pleura lungs and diaphragm, which is a very bad sign; such an inflammation is prognosticated by a blackness of the tongue, a suppression or whiteness of the fœces, and a retention of the urine, which symptoms never fail to prove mortal: a thin pale and ill coloured urine; a want of thirst; redness, in it; and watchings; are signs of an approaching inflammation of the head.

773. Both a true and symptomatic phrenitis (772) have the following symptoms.

A depravation, not only of the sensible ideas, but, also, of the internal senses of reason, and of the affections of the mind.

An increased violent and restless fierceness, or often turbulent sleep.

An

An hard pulse, and a rare and large respiration.

A countenance, for the most part highly red, stern, and ghastly; fierce and protuberant eyes; and a slight hæmorrhage of the nose.

774. As for the prognostic,

A true phrenitis generally carries off the patient, on the third, fourth, or seventh day; which it rarely surpasses;

And when it does, and happens to be violent, it degenerates into a mania. Or,

When it increases gradually, at last it becomes excessive.

It also often terminates in a lethargy, a coma, and catoche.

An æruginous vomitting in consequence of an inflamed brain, a frequent and indecent spitting; a tremor; the fœces and urine intercepted, or white; crude urine; convulsions: catching at flying flakes; muddy eyes; a gnashing of the teeth; a want of thirst, the general forerunner of convulsions; a perpetual change of symptoms; and the subsiding of a tumid ulcer; are frequent presages of great danger and of death.

A true phrenitis is mortal after a peripneumony, and the illiac passion; and very bad after the small-pox.

An inflammation somewhat fixed, and asperity of the fauces tending towards the superior parts, creates a mortal *phrenitis*, and in such cases the patients grope with their hands, and seem to employ themselves in some imaginary labour.

Boerhaave frequently observed cases in which after gentle quinseys terminated without good signs, a mortal phrenitis was produced, because by an unlucky translation, the inflammation of the fauces was conveyed to the head; and laid a foundation for so bad a prognostic. This doctrine, seems to be pretty clearly described by *Hippocrates*. Who in *prorrhet Lib. 1. sect. 11. Charter. Tom. 8.* speaks in the following

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manner. "In acute disorders, a pain, contraction" "and as it were suffocation about the fauces, so that" "when the patient opens his mouth, he cannot shut it" "again, prognosticate a delirium, and some of the" "patients who are seized with these symptoms, become phrenitic, and are reduced to a very dangerous situation." And in *Coac Prænot.* he tells us "that when the fauces are moderately exasperated" "and the patient seized with fruitless efforts to go to stool, a pain of the forehead, and a groaping for objects which have no existence, the situation is very dangerous." And elsewhere he says, "that in a quinsy not accompanied with good symptoms, pains of the head, and a fever are fatal signs." But these patients had a continual delirium accompanied with a studious melancholy, which as *Hippocrates* justly observes, is more dangerous than that which appears with laughter. Thus *Boerhaave* saw a young lady of distinction, attempting for whole days and nights to pass a thread through the eye of a needle, till she at last died: another woman tied knots upon strings without intermission. And there are many instances of cases in which the patients, have with the greatest attention and fatigue attempted the performance of the works they were accustomed to in health.

That species of phrenitis, which prevents the patient from conforming to what is absolutely necessary, is of all others the worst.

This prognostic is mentioned in *Coac Prænot.* N. 100, *Charter.* Tom. 8. thus if such patients from a dread of some snare or treachery will not sleep, will not remain in a dark place, and refuse all aliments for fear of poison exhibited to them, it is obvious that their disorder must be augmented. This species of phrenitis seems to be pointed at by *Hippocrates*, who in *Lib de Morbis.* Lib. 1. *Cap ult. Charter.* Tom. 7. says, "patients who" "are to die of a phrenitis, are perpetually delirious,"

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"because

“ because the body is corrupted and moves irregularly,
 “ and during the delirium they take nothing which is
 “ offered to them, and at last they are greatly extenu-
 “ ated both by the fever and the want of aliments.”

775. Upon laying open the bodies of such as have died of a phrenitis, the meninges have been found inflamed; gangrenes, abscesses, and a sphacelus of the brain, are also found; or acrid and corroding ichors are discovered.

776. From what has been said, it is obvious, that the immediate cause of a true phrenitis, is a primary inflammation of the pia and dura mater; whereas the cause of a symptomatic phrenitis, is a like inflammation arising from the conveyance of an hot, and phlogistic matter to the meninges of the brain.

777. Whatever is capable of producing such inflammations may be considered as immediate causes of a phrenitis (772).

778. Hence the true diagnostics, both of a genuine true and symptomatic phrenitis are taken.

779. In the cure of a phrenitis, the following circumstances ought to be adverted to:

Varices, and hæmorrhoidal discharges, are beneficial to phrenitic patients; as is also, a diarrhæa. A pain of the breast and feet, or a violent cough supervening often terminate a phrenitis; as does, also, an hæmorrhage.

780. A true phrenitis requires the speedy use of the strongest medicines, calculated for removing the inflammation in the arteries of the brain;

781. The cure is principally to be obtained by observing the method proper for the cure of inflammations in general: only it is to be observed, that venesection is to be copiously instituted, either making one very large orifices or opening at one time, a vein in the foot, and the jugular and frontal veins. Diluting, antiphlogistic, and nitrous decoctions are copiously to be exhibited: then antiphlogistic purgatives are to be used, in conjunction with a large quantity of a diluting nitrous drink. Clysters of the like nature with an addition of proper

proper laxative ingredients are to be used: the anus is to be fomented, and the hæmorrhoidal veins either rubbed with fig-leaves, or evacuated by the application of leeches. Gentle collutions and gargarisms for the mouth are to be frequently used: the nostrils, eyes, and ears, are to be fomented; and the head is to be shaved. If these measures are taken without removing the disorder, we are to use opiates, wash the Feet, and apply gentle epispastics and cupping glasses to the inferior parts. The patient is to be refreshed in a moderately cool air, and held in an erect posture.

782. But if a phrenitis is of the symptomatic kind, and arises from some other inflammatory disorder we are carefully to consider, whether the nature of this primary disorder will admit of the measures now recommended (781), if not it is to be cured by the manner usually appropriated to it self; taking care always to use deriving and topical medicines.

A Q U I N S E Y.

783. **A** Very difficult and excessively painful deglutition, or respiration, or both together, which happens from any morbid cause acting upon the organs subservient to these functions situated above the lungs and stomach, is called a quinsy.

784. Of which two species have been observed; one without manifest tumor, either internal or external; in the other, some sort of tumor is always discovered in some of the organs before-mentioned (783).

785. The first species usually happens at the end of chronical distempers, principally after great and frequently repeated evacuations. It is attended with a paleness, extenuation, and driness of the fauces; whence it is evident, that the nerves and muscles of the parts affected are paralytic. It is almost always a sign of approaching death, and very seldom admits of any cure; but, whenever it does, it must be perform-

ed by remedies, which are warming and corroborating, and which fill the empty vessels with good vital juices, such as nourishing aliment, taken in quantities proportioned to the digestive powers, and wine.

786. This species also sometimes appears without any manifest signs of a preceding distemper, and then is generally fatal. Dissections of bodies after death have discovered, that this case is almost always attended with a suppuration of the lungs.

787. That species, which appears with a tumor, takes different denominations, either from the nature of the tumor, or the part which it affects. Hence quinsies are distinguished into œdematous, catarrhus, inflammatory, purulent, scirrhus, cancerous and convulsive.

788. These tumors (787), affect the tongue, and its muscles, the palate, tonsils, the uvula and its muscles, the cavities of the os frontis, the maxilla superior, and os sphenoides, when a polypus, arising in any of these, increases to such a degree, as to stop up the nostrils, depress the pendulous veil of the palate, straighten the fauces, and obstruct the passages of the pharynx and larynx; either some or all the muscles of the os hyoides, the muscles of the larynx, whether internal, external, proper or common; the internal muscular membrane of the aspera arteria; the superior muscles of the pharynx, and œsophagus, otherwise called *spinæter gulæ*; the muscular parts of the œsophagus; and those glands which are situated so near the aspera arteria, and œsophagus, that, by their tumefaction, these conduits may be compressed, amongst which are all the salival glands, and others dispersed about these parts; and lastly, the thyroid glands.

789. From this history of the disease (785 to 786), reasons may be readily assigned for all those various, unforeseen, and fatal accidents, which sometimes attend a quinsy (783.)

790. But as this distemper is attended with a variety of circumstances, which are productive of various events, it will be necessary to specify particulars.

Of an AQUEOUS QUINSEY.

791. **T**HIS is a laborious and painful exercise of respiration and deglutition, from a lymphatic or œdematous tumor of the parts destined for these functions, or those adjacent to them.

792. The seat of such a tumor, like that of every coacervation of lymph, is in that part of the glands, where the lymph, secreted by the arteries, is separated from the mass of blood, and deposited.

793. The cause therefore, of such a tumor is whatever prevents a free discharge of the lymph from these reservoirs; and the causes of such obstructions are manifold and various, as,

Any compressure of the vessels, into which the excretory ducts of these glands naturally discharge the secreted fluid.

An obstruction formed in the follicles of the glands, from chalky, pituitous, calculous, fungous, or such like concretions.

The same kind of concretions in the emissaries, or excretory ducts of these glands.

A compressure of the parts abovementioned.

Cold applied to the extremities of the excretory ducts.

A languid circulation of the humours.

794. The effects of these obstructions are a watery, white, cold tumor; a compression of the adjacent parts; and consequently, an impediment of those functions, which depend upon the natural state of these parts.

795. Hence the diagnostic signs (791, 792, 793), will be easily known; and also the prognostic (794), which is, that if the tumor is suffered to advance much, the patient will soon be suffocated.

796. The cure is obtained, 1st, by such things as

resolve, move, or by corroding, or cutting, remove the obstructing causes. Of this kind are emollients, aperients and laxatives applied by way of fomentation, cataplasm, gargarism, injection, collution or vapour; as also frictions, caustics and the knife, 2d, such things as diminish the quantity of the lymph by evacuating it through the opposite places, which is done by apophlegmatisms, vesicatories, dry external sudorifics, internal sudorifics, diuretics, and hydragogues which operate by stool (201), 3d, abstinence from liquors, and the use of healing and drying aliments, and 4th, by increasing the circulation by the medicines (98, 99.)

A SCIRRHOUS QUINSEY.

797. **B**UT if a scirrhus and fast increasing tumor seizes the glands described (788), it is known from the signs of a scirrhus (392), from a knowledge of its situation a future quinsy is foreseen, and a quinsy already formed discovered. If in this case extirpation can be performed, it is of all others the safest remedy, or in internal scirrhus tumours, a corrosion about the fauces is with great prudence to be attempted thus.

Take some of the oil of tartar, per deliquium, dip in it a small piece of Lint wrapped up, and conveyed through a quill to the part affected, till the part is gradually corroded. This preparation is stronger when made with quick lime water, but the application is more dangerous.

. An INFLAMMATORY QUINSEY.

798. **W**HEN the glands in (788), or the muscles in (788) are seized with an inflammation, then there arises a disease of a peculiar kind, which is highly acute, increases fast, and is often insuperable.

799. The

799. The causes of this disorder (798), are 1st, in general every thing capable of producing an inflammation (315, 376, 377, 378), 2d, every thing which determines the causes of the inflammation, especially to the parts described (788), and particularly to the larynx, pharynx, os hyoides, and their muscles, and to the superior part of the aspera arteria. Among these causes may be numbered a natural disposition, which principally prevails in young constitutions, abounding with blood, and particularly in those who have red hair. Frequent and violent exercise of the parts abovementioned, either in declaiming, singing, or vociferation; riding briskly against a cold wind; blowing into musical instruments, great heat succeeding intense cold in the spring; dryness of the fauces, occasioned by respiring hot air, in the summer; or in an inflammatory fever.

800. When an inflammation is produced by the causes above-mentioned (799) very terrible symptoms are excited, which are various as the disorder happens principally to affect different parts.

801. Thus, if the internal muscular membrane of the aspera arteria is only affected, a tumor, heat, pain and burning acute fever are excited, without any external signs of the distemper. In this case, the voice is small, shrill, and uttered with a hissing noise. Inspiration is excessively painful; respiration is small, frequent, and scarcely performed but in an erect posture, and then not without great difficulty: hence the circulation of the blood through the lungs is much obstructed, the pulse begins to sink surprisingly soon, great anxieties come on, and the patient quickly expires. This is one of those fatal cases, which destroy without any external appearance; and the nearer the seat is to the glottis and epiglottis, the more fatal it is.

802. If the larynx is affected with an acute inflammation, which principally seizes the musculus albus of the glottis, together with the fleshy muscles, which when they act, close it, a most terrible and strangulating quinsy arises.

The signs of this species of quinsey are much the same as those of the preceding (801), except that the pain is intolerable, during the elevation of the larynx, in order to swallow, and is remarkably increased by speaking, or vociferation; the voice is extremely acute and shrill, excessive anxieties come on, and death quickly ensues. This is, of all those quinseys, without any external signs, the most dangerous.

803. If the muscles only, which are employed in elevating the os hyoides and larynx, suffer an acute inflammation, it may be distinguished by these evident signs: respiration is tolerably free and easy; but the first part of the action of deglutition is attended with excessive pain, because on this occasion the muscles above-mentioned act. Add to these the general signs of an inflammation, which will appear evidently in these muscles upon examination.

804. When the pharynx alone is affected, the specific signs of it will appear upon inspecting the fauces. In this case, respiration is tolerably easy; but deglutition extremely painful, or utterly impossible: for upon any attempt to swallow, the substance intended to be conveyed to the stomach, is returned by the nose, or sometimes forced into the aspera areria, there exciting a violent cough. Hence arises an impossibility of taking any aliment, either solid or fluid, the consequence of which is, that the body must become attenuated or dry; and that the fluids must contract an acrimony, for want of a fresh supply of balsamic chyle. The fever, however, in this case is not so intense, as in those preceding: nor does it so suddenly terminate in death.

805. If the tonsils, uvula, and pendulous veil of the palate, together with the muscles called *Pterygostaphylini*, are much inflamed, nearly the same symptoms will arise as in the preceding case (804), respiration is, however, somewhat laborious, and is little or not at all performed through the nose, and by the fauces, not without some difficulty; whatever is attempted to be

be swallow'd, is forced back again through the mouth, by reason of the obstruction it meets with, and the excessive pain it excites; there is a perpetual discharge of saliva, by hawking, and a continual and copious distillation of phlegm into the cavities of the tonsils; an acute pain is perceiv'd in the internal ear, and the *Tubæ Eustachiana*, which passes from the fauces to the ear; a crackling noise is perceiv'd in the ear, during deglutition; and sometimes utter deafness ensues. This case is in our days frequent from the venereal disease, and is attended with much danger.

806. If all or most of these parts are inflamed (801, 802, 803, 804, 805,) the disease is in proportion more severe, as the inflammation affects the greater number of the parts above specified: and hence more symptoms may be expected to arise, and those of a worse kind.

807. For the return of the blood into or through the external Jugulars now compressed, being intercepted, the fauces, lips, tongue, and face, swell: the tongue hangs out of the mouth, is intorted and inflamed; the eyes are red, prominent and ghastly; the brain is, as it were, suffocated by an abundance of blood retained in it: Hence the sight, hearing, and feeling are rendered dull: Hence also a delirium, a perpetual gaping of the mouth, a stertor, an impossibility of lying down, because of the strangulation attending that posture; and a manifest redness, tumour, pain, and pulsation, in the breast and neck; whence the jugular, and frontal veins, and those under the tongue, called *Raninae*, becoming varicose, are distended.

808. These inflammatory quinsseys run through the same stages as other inflammations, are susceptible of the same alterations, and, like them, terminate in resolution, suppuration, a gangrene, or scirrhus, unless they strangle the patient before any of these can happen.

809. There-

809 Therefore, as soon as we are satisfied by the signs above specified, that the internal muscular membrane of the aspera arteria, or the muscles about the glottis and larynx (801, 802), are affected, we must immediately enquire, whether the distemper is still in a state of inflammation (382, 383, 384), and, if we find it is, resolution (386), must by all possible means (395 to 402), be instantly attempted.

Therefore, 1. Let the blood be immediately taken away by a large orifice, and in great quantities; and let this be repeated, till such time as a general weakness, paleness, refrigeration and subsiding of the vessels, shew that the force of what remains is not capable of augmenting the tumour and rigidity of the small vessels about the parts affected.

2. Strong purges must be administered, either by the mouth, or by clysters, and these must be repeated,

The following purge is adapted to this intention:

Take of diagrydium, eight grains: make an emulsion with half an ounce of water; to which add an ounce and an half of syrup of sena, for a draught.

A proper Clyster may be thus prepared.

Take sena-leaves, an ounce: boil these in a sufficient quantity of water to eight ounces; and to the strained liquor, add, of nitre and syrup of sena, each an ounce.

3. The regimen must be extremely slender, both with respect to solid and fluid aliments.

4. The other medicines should be principally nitrous and subacid.

5. Mean time, let the patient receive some tepid, moist, resolving vapour at his mouth; let fomentations

ons be used externally : and let vesicatories be applied, in order to derive a portion of the offending humours from the parts affected.

The following form may serve for an example of a vapour.

Take elder, rose, and marygold vinegar, each an ounce; elder-flower water, six ounces: mix together; let the vapour of this be conveyed to the fauces by means of a funnel.

Hippocrates also advises fumigations of the fauces, with *Cilician* hyssop, sulphur and asphaltus.

810. When the muscles, which are employed in elevating the os hyoides and larynx (803), are only affected, the case is not so dangerous (801, 802): the same sort of remedies (809), however, are required, though not so powerful. In this case, anodyne, relaxing, and emollient cataplasms, applied externally, are particularly useful. For this purpose,

Take of the lens palustris (ducks meat) six ounces; of the flowers of water-lillies, five ounces; flowers of poppies, eight ounces; of marsh-mallows, six ounces; of elder and melilot, each four ounces. Boil these in water, adding at the end of the decoction, two swallows-nests, and a sufficient quantity of meal of linseed. Make a cataplasm with three ounces of oil of white lillies.

The strained liquor may be used for a fomentation.

811. If the disorder affects the pharynx only, or the tonsils, uvula, and pendulous veil of the palate, with the *musculi pterygostaphylini* (804, 805, 806), or many of these parts together, and the state of inflammation still subsists, all the remedies above specified (809, 810), are to be called in to our assistance, that
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by their united force they may relieve the patient. But besides these, the mouth and fauces must be kept continually moist, by mild attenuating nitrous liquids, diluting aqueous fluids, or relaxing decoctions of pinguious ingredients: these must be kept perpetually in the mouth, without motion, or they may be gargled gently, or injected with a syringe. But the benefit arising from these depends upon their continual use: for otherwise the parts grow immediately dry.

Take of the decoction of the ingredients, specified in the preceding prescription, twelve ounces; elder vinegar, syrup of marsh-mallows, each two ounces; purified nitre, two ounces: mix for a gargarism:

Or,

Take of fat figs, twenty-two; leaves of marsh-mallows, two ounces: boil for a considerable time; and use the strained liquor in the manner above directed.

812. But if the remedies above-mentioned (809, 810, 811), are not at all made use of, or are applied too late, or without effect, provided the distemper is recent, threatens strangulation, and resides in any part above the place where the incision is to be made, and is attended with the dangerous symptoms in 806), the operation of bronchotomy must be performed, after prognosticating the danger of the distemper.

813. This operation after duly preparing the patients body is to be performed in the aspera arteria, about an inch under the lower part of the larynx; the skin and teguments are first to be divided; the muscles removed; the interstice between the rings of the aspera arteria cut; and a silver pipe put into the aperture; then removing the cause which demanded the operation,

tion, the wound is to be cured. Nutritive clysters are to be injected in cases where deglutition is impossible.

Take of a good broth of flesh meat, ten ounces; nitre, ten grains; spirit of salt six drops; make a clyster to be injected every eight hours, and retained as long as it is possible.

A PURULENT QUINSEY.

814. **I**F the inflammation has proceeded so far, that the part affected begins to suppurate, which may be known by the signs (387) of an abscess. Resolution being no longer possible, we must endeavour to free the patient from the offending matter, by promoting an abscess, and by the general remedies (402 to 412). Use therefore emollient gargarisms perpetually; apply large relaxing cataplasms; and, when the matter of the abscess is perfectly formed, and the exact situation of it is discovered, let it be opened. Mean time, if it should be absolutely necessary for the sake of respiration, the operation of bronchotomy may be performed (812, 813).

115. It must be remarked, that the species of quinsy (801, 802), which affects the internal membrane of the aspera arteria, and the larynx with its muscles, can very seldom arrive at suppuration, because, if not resolved 809, it must be fatal before this can happen.

A GANGRENOUS QUINSEY.

816. **I**F the causes of a quinsy (799) are increased and lodged in any of the more noble parts (804, 805) the disorder often degenerates into a mortal gangrene which may be known, first, from the general signs of a gangrene (426, 427, 428, 429) applied to the parts effected and whose functions are injured. Secondly, from signs which are peculiar to this

this disease. Thus if a tumour and redness, which were before conspicuous, suddenly disappear without an evident cause; if the pain vanishes in like manner; if the fauces on a sudden become equal, smooth, dry and livid; we may be certain, that a gangrene is begun; and if so, it admits of no remedy.

817. An inflammation of the tonsils, uvula, and palate may terminate in a scirrhous, which may be readily discovered by the general signs of a scirrhous (392) but is not so easily cured, especially when it degenerates into a cancer. See (797).

A CONVULSIVE QUINSEY.

818. **I**F the nerves which convey sensation and motion to the organs of deglutition and respiration, are by any means prevented from exercising their functions upon those parts, a nervous or paralytic quinsy is formed: This is said sometimes to happen from a luxation of the toothlike process, of the second vertebra of the neck inwards.

If the muscles of the larynx or pharynx, are convulsed by any cause whatever, a sudden and suffocating quinsy may arise. This frequently happens in epileptic, spasmodic, hypochondriac, and hysterical cases, where it frequently goes off and returns, without any great danger. As it is only a symptom of the original disorder, and depends upon that, it is to be cured by remedies adapted to remove its cause.

819. From this history of a quinsy (783) to 819), we understand the reason of the following observations of Hippocrates.

1. A quinsy appearing without any conspicuous sign, except a suffocating orthopnoea, accompanied with an acute fever, an intense pain of the head, or legs; and without any good signs, soon proves mortal, since it generally destroys the patient, on the second or third day.

In cases of this nature, the inflammatory fumes seize the larynx, or internal membrane of the bronchia, and, tis also confirmed by experience, that pains of the legs without other good signs, are very bad in patients labouring under a quinsy.

2. *A quinsy supervening upon other inflammatory disorders, or those species specified (801, 802), arising from those mentioned (803, 804, 805), are mortal.*

A disease is said to supervene upon another, when a fresh disease is added to a former. Thus *Galen* in *comment in aph. 11.* tells us, “ that a disease degenerates when it ceases and terminates in another; but “ a disease supervenes, when it happens without the “ cessation of the former disorder.” Hence such a supervention denotes an augmentation of the primary disease, whilst it is propagated to other parts of the body, or at least it indicates, that the fluids and solids are so changed by the disease, that other functions are also injured. Hence *Galen*, in *comment in aph. 35. sect. 6.* tells us, “ that when diseases, or symptoms “ supervened others, the antient physicians used to say “ the original disorders were augmented.” Since then an inflammatory quinsy is of itself highly dangerous; it is sufficiently obvious that there is hardly any hope of recovery left when a quinsy supervenes upon another inflammatory disorder; for *Hippocrates* in *lib. de affectionibus, cap. 6.* tells us, “ that diseases supervening upon others, generally prove mortal; since “ the body being weakened by the former, the patient falls a victim to it, before the latter ceases.” But as the cure of a quinsy, requires liberal venesection, and the use of antiphlogistic purgatives, the patient weakened by the previous disease, cannot bear these evacuations. The danger is still augmented, “ because diseases do not generally supervene in small “ and slight, but in violent and excessive disorders,”

as we are informed by *Galen*, in *comment aph.* 11. sect. 7. in burning fevers the deglutition is also sometimes injured, which is a very bad sign.

3. *Quinseys in which the mouth froths and discharges a thin serum; in which the patient voids his excrements without being sensible of it, which without any conspicuous sign, seize the patient in a very acute fever; in which the tumor, redness and pulsation in the fauces disappear whilst there is a strangulation of the tongue, prove universally and speedily mortal.*

When an inflammatory quinsey seizes the muscles, subservient to the elevation of the os hyoidis and larynx or the pharynx, the tonsils, the uvula, the velum pendulum or its four pterygostaphylic muscles, and proceeds so far as to affect the bronchia or larynx, it is sufficiently obvious that the disorder is mortal. Besides though by a translation, the inflammatory matter affecting the tonsils and pharynx, should be conveyed to the larynx and aspera arteria; there would be but small hopes of the patients recovery.

When the tonsils, or parts adjacent to them are inflamed, there is a perpetual dropping of phlegm to their cavities. Hence in this species of quinsey, there is an almost perpetual discharge of frothy phlegm. This quinsey is not however so mortal as some others: but in the worst and most mortal quinseys, almost all the same phænomena appear, as in those who are hang'd, who whilst they die have a tenacious froth collected about their mouth and lips. Thus *Hippocrates* in sect. 3. *aph.* 43. tells us, "that among those who
" are hanged or suffocated, but are not totally dead,
" such as have froth about their mouths do not recover." Here it is to be observed that he does not say that the phlegm runs down, but is collected about the mouth; for in this case the passage of the blood from the right ventricle of the heart through the lungs to the left, is hindered: hence the extremities of the pulmonary arteries are so pressed as from their open
mouths

mouths to discharge, a preternaturally viscid liquor into the vessels of the lungs, which cannot be expectorated by spitting, but being collected there, ascends into the fauces, fills the mouth and is at last collected about the lips like froth. We generally see something similar to this happen in patients about to die, who have a few hours before an ungrateful stertor and rattling in the breast, proceeding from such a viscid liquor, collected in the bronchia of the lungs, and which is also generally expressed from the mouth after death when the cold has constricted all the parts: such a sign therefore appearing in a quinsey prognosticates suffocation and death.

It is also a very bad sign, when in an inflammatory quinsey, a thin serum continually drivels from the mouth. Such a discharge of serum may arise from a compression of the large veins which are situated in the mouth and convey the blood back to the heart from the head. This is also demonstrated by *Lower's* experiment on a dog, whose jugular veins he tied; for all the adjacent parts were covered with a thin serum. When therefore this symptom is observed, we may conclude that an inflammatory tumor compresses the vessels, and produces this discharge of serum.

A discharge of the excrements without the patients being sensible of it, is by *Hippocrates* condemned as a mortal sign, and this principally holds in a quinsey, since it is a symptom which prognosticates a speedy suffocation; and it is observed that persons hanged discharge both their fœces and urine. *In coac prænot.* no. 368. charter tom. 8, when speaking of the various prognostics of a quinsey, *Hippocrates* says, "It is a mortal sign, when those who have a violent pulsation in their veins are seized with a sudden and insensible discharge of their excrements". *Foefus* thinks that this violent and conspicuous pulsation is observed in inflammatory quinseys, whilst the arteries in the neck and temples beat very palpably. But *Düretus* seems with reason to have al-

tered this reading, since instead of σφύγμῳ pulsation, he puts πνίγμῳ strangulation, which reading excellently confirms this prognostic of a quinsy.

A quinsy seizing a patient in any very acute disorder, without any conspicuous sign, is also mortal.

An inflammatory quinsy without any conspicuous sign except strangulation proves quickly mortal, as also that which supervenes in inflammatory disorders. The same also holds true, when a similar quinsy arises from highly acute fevers though not of the inflammatory kind, for it is certain from experience that there are such fevers. This doctrine is farther confirmed by *Hippocrates*, who in sect. 4. aph. 34 and 35, speaks in the following manner, "If a person labouring under a fever is suddenly seized with a suffocation without any tumor of the fauces, it is mortal", and "If a person labouring under a fever, has his neck suddenly distorted it is a mortal sign." Where it is to be observed that he equally condemns as mortal that quinsy which injures deglutition and that which suffocates respiration, if they happen suddenly to persons labouring under acute fevers; for in the latter case the neck is distorted by a convulsion of the muscles; and in the former the muscles which close the glottis are affected in the same manner. Now it is certain that convulsions supervening an acute fever, are highly dangerous, and this danger is increased when the convulsions seize the muscles subservient to deglutition or respiration.

That quinsy is also dangerous and mortal in which the tumor, redness and pulsation of the fauces disappear, and the tongue is as it were suffocated at the same time.

In this case the quinsy which only injures deglutition and is consequently less dangerous, is changed into that which suffocates respiration, and which in this case is always mortal.

A PERIPNEUMONY.

820. **W**HEN in those pulmonary vessels which are susceptible of an inflammation, a true inflammation is formed, the disorder is called a peripneumony.

821. The vessels susceptible of such an inflammation are the bronchial and pulmonary arteries, and their lateral lymphatic vessels.

822. Hence we may conceive two different kinds of peripneumonies, one of which has its seat at the extremities of the pulmonary artery, and the other in the bronchial arteries.

823. It is sufficiently obvious, that the former is far more dangerous and may arise from that which is less so and that they have many causes in common.

824. These numerous causes may be reduced,

1. To the general causes of all inflammations throughout the whole body, (575 to 380.)

2. To those which in a particular manner affect the lungs, such as an air too humid, dry, hot, cold, heavy, or light, or an atmosphere impregnated with caustic, astringent, or coagulating exhalations, and consequently insalutary; a thick dry, and viscid chyle, either mixed with acrid particles, or free from such a mixture; violent exercises of the lungs by running, wrestling, efforts, singing, crying, or riding hard against the wind; coagulating caustic, and astringent poisons introduced into the veins and convey'd to the heart; violent perturbations of mind; a quinsy accompanied with an oppression of the breast, and an orthopnea; a violent pleurisy and an excessive parophrenitis.

825. If these causes (824) have once excited the disease, it will produce various effects, according to the diversity of the part affected (822); for a bronchial inflammation (382 to 393) by compression and contagion, inflames the contiguous extremities of the pulmonary artery.

826. When the extremities of the pulmonary artery are inflamed the blood becomes stagnant, the vessel is extended, the most liquid part of the fluids is as it were expressed, by transfusion the thicker part of the fluids is accumulated and all the blood, as yet capable of circulation, is collected between the right ventricle of the heart, and the extremities of the pulmonary arteries: hence the lungs become oppressed, incapable of expanding themselves, and livid; the left ventricle of the heart is deprived of blood; a great weakness is brought on; the pulse is small, soft, and highly unequal; the respiration is small, frequent difficult, hot, accompanied with a cough, and incapable of being performed but in an erect posture; the blood about the right auricle and ventricle of the heart stagnates; the face, eyes, countenance, fauces, tongue and lips, become unusually red; and, at last a suffocating death, attended with an unsurmountable anxiety and delirium, ensues.

827. If a peripneumony (826) strongly affects both lobes of the lungs at once, a sudden and inevitable death will ensue; since in such a case, nature can be assisted by no antiphlogistic medicine. Compare (386 and 365 to 402).

828. But if a peripneumony only affects a small part in one lobe of the lungs, and does not proceed from violent causes, there are some, though not infallible hopes, that it may be happily cured.

829. From what has been said (824 to 829); we may deduce the diagnostic and prognostic signs of a peripneumony, especially if we consider, that the terminations of this disorder are the same with those of an inflammation, (386 to 393). Hence it has, also, various stages, according to the different times of its duration; so that it may terminate in a recovery, some other disease, or in death.

830. A Peripneumony is cured,

1. By a benign resolution, if the habit is lax, the humour mild, the viscosity not too great, and the part affected

affected whether in the bronchial, or pulmonary arteries, not considerable.

2. By a speedy, free, and copious spitting of yellow thickish matter, mixed with a little blood; in consequence of which the pain is alleviated, respiration amended, the pulse rendered larger and fuller, the spit itself soon transformed into a mild nature, and changed into a white colour. This principally happens, when the seat of the disorder, whether in the bronchial or pulmonary artery, is not very large.

3. By a bilious flux, which affords ease, and in which a matter, almost resembling the spit already described is eliminated.

4. By a copious, thick, and hypostatic urine, which affords ease, has, at first a red, and then a whitish sediment, discharged before the seventh day. In this case, the respiration becomes easy; the fever mild, and of a good kind; the thirst is removed; and the heat, moisture, laxity, and softness, are equal all over the body.

831. A peripneumony may terminate in some other disease, depending either on the nature of an inflammation, or of the lungs themselves, according as they are by this means deprived of their proper action.

832. Hence, in the first place, a peripneumony may terminate in a suppuration; which happens, when the inflammatory matter (386, 388, 824), being neither resolvable by nature (830), nor corrected by art; but however, being mild (388), stagnant, hot, and acted upon, breaks the small vessels, resolves them into pus, and by extending or corroding the sides of the vessels in which it is confined, forms an abscess, or apostem, within fourteen days.

833. That this is about to happen (832), may be known from the following signs;

1. If the sure signs of a pretty severe (825, 828), though not of the most violent (826) peripneumony, have previously appeared.

2. If a resolution, and its signs (830) have not appeared soon enough; that is before the fourth day.

3. If the symptoms (825, 826), are neither relieved by a concocted spit, evacuated on the critical days, which are the third, fifth, seventh, ninth, eleventh, and fourteenth, which indicates that the cure is begun, by the successive change of the spit; nor by venesection, nor by medicines, and a proper regimen.

If on the contrary, the symptoms, of themselves not very violent, obstinately remain, and are accompanied with a soft undulating pulse, and a continual delirium.

834. That an apostem is really forming may be known,

1. If the signs above enumerated (833) are present.

2. If slight, wandering, and often recurring horripulations happen without a manifest cause; if the pain remits and the dyspnoea continues; if the cheeks and lips are red, if a thirst is present, and a fever, especially towards the evening, afflicts the patient; and if the pulse is weak and soft.

835. That an apostem is already formed may be known.

1. From the preceding signs (834, 834.)

2. From the obstinate and dry cough, which is increased after eating; the difficult, small, and wheezing respiration; which is accompanied with a kind of noise, and increased after eating or exercise; a capacity of lying with ease only on one, and that is the affected side; a continual periodical fever augmented after eating, drinking, or exercise, and attended with a redness of the cheeks and lips; a loss of appetite, an excessive thirst; night sweats especially about the breast and forehead; frothy urine, paleness, extenuation; and lastly, from the extreme weakness of the patient.

836. An apostem already formed (825) has various terminations; for

1. It either suffocates the patient by a tumor possessing

feeling the whole lungs, and which either compresses or hinders those parts of them, which were before free ;

Or,

2. An apostem suffocates the patient by an eruption of pus, discharging itself into the *aspera arteria* all at once ;

Or,

3. An apostem is dissipated by purulent spit, which consumes it, and frees the patient from the disorder ;

Or,

4. An apostem is terminated by a falling of the pus into the cavity of the thorax, or the dilated vacuities of the *mediastinum* : And,

5. Hence arise consumptions, of various kinds, and an *empyema*, which generally proves mortal.

837. A *peripneumony* terminates in some other disease, if the purulent matter becoming inflammatory (832, 833, 854), is resorbed into the pulmonary veins, mixed with the blood, and deposited on some particular parts. Hence the lungs are freed and some other parts loaded ; and if these are less requisite to life, the translation is good ; but if the translation is to the liver, spleen, or brain, the event is generally fatal. Hence *peripneumonic* abscesses are formed about the ears, legs, and *hypocondria*.

838. That such abscesses are about to be formed may be known,

1. By an observation of the signs of a *peripneumony* not of the worst kind (833, 834, 835) ; accompanied with a fever, neither violent nor malignant, tho' continual, with a pain, anxiety, and heaviness of the thorax, and a *dyspnoea*, which are not violent, and

without being attended with the signs of a resolution. (830.)

2. If in conjunction with these signs the pulse is greatly and continually fluctuating; and,

3. By the pains, redness, heat, and tension, about these parts (838).

839. That such abscesses are about to be formed about the legs, may be known.

1. If the signs of the future abscesses (838) are present; and

2. If together with these, the signs of a slight inflammation about the hypocondria are observed.

840. That such abscesses are about to be formed about the ears, may be known.

1. If the signs already enumerated (838) are present; and,

2. If the hypocondria are at the same time soft.

841. That the matter of an abscess is conveyed to the liver, may be known,

1. If the before enumerated signs (838) are present; and

2. If there is a permanent pain of the liver, accompanied with a discharge of yellowish urine, and a yellow colour of the skin. Hence, an apostem of the liver arising terrible disorders are produced.

842. If these abscesses (839, 840) in the legs, and about the ears, relieve the lungs, and remove the fever, if they remain purulent, running and fistulous and if they happen soon enough, that is before the ninth day, they are always salutary: but if they arise after the spit is already purulent, though not very yellow; and without affording relief, they are bad; but if after they are formed, they disappear, the disease being crude, and the peripneumony returning, they are absolutely mortal.

843. A peripneumony may, also, terminate in a callous or scirrhus tumor of the lungs, if an impacted matter, and other conditions (392) contributing to the generation of a scirrhus, concur. Hence the

the patients respiration during the whole remaining part of this life is difficult, attended with a cough; cannot be performed but in an erect posture; is increased after eating and exercise; and unaccompanied with the already described signs (358) of a latent apoplesem. Hence arises the adhesion of the lungs to the pleura.

844. If the bronchial or pulmonary artery are, either from an internal or external cause (824), seized with a violent inflammation (388), a gangrene soon arises; and hence a sphacelus, on account of the quantity and motion of the blood. That a gangrene is about to happen, may be known,

1. By the signs of an highly violent peripneumony (826). not relieved by any accident, or art.

2. By the great and sudden weakness, principally discovering itself in the pulse; and,

3. By a coldness of the extremities. But that a gangrene is already formed, may be known, if these signs have preceded, and if the spit is ichorous, thin, cineritious, livid, black, and fetid. This state is soon succeeded by death.

845. These various changes of a peripneumony (830, 832, 837, 843, 844) are to be learned from an observation of the history of the disease, and a dissection of the carcases of those who have died of it.

846. Hence it is obvious, that the disorder which the antients described under the name of a peripneumony is a true inflammation of the lungs.

847. The prognostic, therefore, will be clear and just, when we assert, that a peripneumony is always dangerous, on account of the great necessity of the function of the lungs to life, and the correction of the inflammatory matter; on account of the quantity and impetus of the blood continually conveyed to the lungs on account of their perpetual motion; on account of their situation which prevents the application of remedies; on account of the tenderness of their small vessels, which are easily destroyed, and lastly, on account

count of the impossibility of a resolution, so requisite to the cure of an inflammation.

848. Hence (848) it is evident, when, why, and with what symptoms, this disease terminates fatally; that is,

If the whole lungs together with the heart are inflamed; if the heart falls upon the side; if the patient is seized with a paraplegy, is cold, and void of sense, in this case he dies the second or third day.

Hippocrates in coac prænot. n. 401. Speaks in the following manner, "When the whole of the lungs and heart are so inflamed that they fall to the side, the patient becomes totally paralytic, cold and destitute of sensation, and dies on the second or third day. But if there is only a small inflammation of the lungs, without that of the heart, he lives a longer time," for when the whole lungs are inflamed, the right ventricle and auricle of the heart will be filled on account of the obstructed passage of the blood through the inflamed lungs, in consequence of which the coronary veins cannot evacuate themselves, by which means an inflammation of the substance of the heart will happen. But since the heart is suspended by four large blood-vessels in the pericardium, almost in an horizontal situation; so that the right ventricle and auricle are situated towards the anterior part of the body; hence the reason is obvious, why, when, the right ventricle and auricle are most distended, and the left ventricle and auricle almost empty the heart falls forwards and touches the side. It is certainly surprising that *Hippocrates* should have observed this without a knowledge of the laws of the circulation, or a dissection of patients who died of a peripneumony. But perhaps a gangrenous livid colour appearing in that part of the side, offered him a sign of this circumstance; for in *coac prænot. no. 400. charter tom. 8.* he observes that a livid colour of
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the external part of the side denoted that the lungs were so highly inflamed as to touch the side, and patients of this kind, were said to be [Βλητός] blasted.

But since in order to muscular motion, a due influx of the nervous fluid and blood into the muscles is requisite, and since it is certain that in a violent peripneumony almost all the blood is collected about the heart whilst only a small quantity of its thinnest part is compressed into the left ventricle; and that at the same time the return of the venal blood from the brain, is hindered, by which means the brain is compressed by the distension of the large blood vessels; hence the reason is obvious why such patients are paralytic, so that I saw a very robust young man labouring under a violent peripneumony, on the second day of the disorder reduced to such a state, that he could not move his hands. Hence also we know the reason why, almost all the parts of the body, and especially the extremities become cold and the patients are dull and deprived of sensation when they are near death; for they are before afflicted with an intolerable uneasiness: hence *Aretæus* in lib. 2. cap. 1. *de causis & signis morbi acut.* says of such patients that are ignorant of the nature of their present symptoms when death is at hand, that when they are asked with respect to the disease, they answer, there is no danger; but the coldness of the extremities, the livid colour of the nails, the weakness, celerity, and deficiency of the pulse sufficiently indicate that a fatal termination of the disorder is very near. But as these bad signs never appear except in a violent peripneumony, the patient is rarely able to sustain the shock of the disease beyond the third day, but generally dies sooner.

If the urine which is good and concocted in the beginning of the disorder, becomes thin after the fourth day.

With respect to the evacuation of the morbid matter of a peripneumony by urine, *Hippocrates* in *coac prænot.*

prænot. no. 415. charter tom. 8. tells us " that in a peripneumony it is a mortal sign, when the urine being thick in the beginning, becomes thin before the fourth day." And *ib.* no. 580. when speaking of the same prognostic, he says, " That in peripneumonies, it is a mortal sign, when the urine which in the beginning was thick, becomes thin after the fourth day." But it is probable that the former is the juster reading, because we rarely or never observe a total solution of a peripneumony before the fourth day. Nor is any thing to be dreaded when the urine is thin after the fourth day, provided the matter of the disorder is evacuated, and the lungs totally relieved. But the patient's death is to be dreaded when the urine becomes thin, before the signs which indicate that the lungs are totally relieved appear.

If in the height of the disease, the patient is obliged to sit in an erect posture.

In this disorder the arteries of the lungs are distended and infarcted by stagnant blood, and consequently not only diminish the cavity of the lungs but also hinder their easy expiration of the inspired air, since they are no longer spongy and soft, but fleshy and hard. Hence such patients can only inspire a small quantity of air at once, which they endeavour to make up by the frequency of inspiration and strong efforts to it. For this purpose they by a kind of peculiar instinct, raise themselves upright in their beds in order to facilitate inspiration; for in an erect posture of the body, the abdominal viscera draw the diaphragm downwards and by that means augment the dilatation of the breast.

If there is a discharge of pus by stool.

The material cause of a peripneumony, when coagulated and rendered moveable, acquires a nature analogous to that of pus, though it does not absolutely deserve

deserve that name. This material cause is also expelled from the body by various ways, and amongst the rest by stool. We do not however here treat of such an excretion, but only of a discharge of a true and copious pus, which in this disorder indicates a violent previous suppuration of the lungs: Thus in *coac prænot.* no. 429. charter tom. 8. we are told, "that in a "suppuration of the lungs, a discharge of pus by "stool proves mortal;" for as pus evacuated in this manner must be mixed with a great many other substances naturally eliminated by stool, so a large quantity of it is requisite to evince that it is pus: but before pus contained in an abscess of the lungs can be voided by stool, it must either make its way by eroding the adjacent viscera such as the liver or stomach, instances of which are recorded in practical writers; or such a pus being attenuated by its continuance, and the heat of the place may be resorbed by the veins, mixed with the circulating humours, conveyed through the miseraic veins into the intestines, and thence discharged by stool. It is sufficiently obvious that no hopes of recovery are left, when by an exulceration of the lungs, the adjacent viscera are eroded. But, perhaps there may seem to be greater hopes when without any erosion of the viscera, the resorbed pus is discharged by stool. If however, we consider that the most mild and laudable pus is of the consistence of cream, it is obvious that it cannot so long as it is possessed of these qualities be resorbed without the greatest difficulty. By its stay it is indeed attenuated, but then at the same time it becomes acrimonious and putrid. Hence a pus thus changed and then resorbed, contaminates the whole mass of blood with a putrid and malignant cacochymy, which generally never fails to prove mortal, because together with this pus, the sound humours resolved into a kind of putrid gore, are also discharged by stools, which suddenly impairs the strength of the patient, as is obvious in phthisical persons, whose life and disease are at once terminated by a putrid diarrhoea.

hoæa of this kind. Though there have been a few instances in which resorbed pus, even when discharged from an abscess of the lungs, has been happily evacuated by stool, yet as prognostics ought not to be deduced from rare but frequent events, I think we may conclude, that most frequently if not always a discharge of pus by stool is mortal in this disorder.

If it is accompanied with a kind of dry fervour, and, as it were rattling noise of the throat as if the lungs were full.

It is in a peripneumony of all other signs the worst, when this ungrateful noise is perceived by the bystanders; it resembles the noise of water boiling in a kettle, especially when covered. This noise almost always denotes that the ærial cavities of the lungs are rendered less and compressed either by a collection of spit which cannot be expectorated, or by an infarction and distension of the blood vessels. Such an effect may also some times be produced by a dryness of the lungs. In old persons labouring under an asthma arising from a viscid mucus oppressing the lungs, such a noise is perceived. But when it arises from this cause it is not very dangerous, since by the expectoration of a spit or two it generally ceases, or at least is greatly diminished. But in a peripneumony this noise denotes that the blood vessels of the lungs are so infarcted and distended as to compress the vessels of the lungs, by which means the free ingress and egress of the air is obstructed, whilst at the same time the collected frothy mucus, which is agitated by the air and cannot be carried off, on account of the difficulty of respiration, produces this ungrateful stertor. When the matter of the disease is evacuating by spit, a slight noise of this kind is sometimes heard, but ceases immediately when the spit is lodged in the Trachæa and which was the cause of it is expectorated. Hence *Hippocrates* in prognost. charter tom. 8. cautiously proposes
this

this prognostic in the following manner. “ It is a bad
“ sign when the lungs throw up nothing, but are di-
“ stended and make a noise in the throat.”.

*If the disease is violent in a body which is highly dry,
hard, callous and accustomed to exercise.*

In these cases there is a violent and inflammatory tenacity in the fluids, whilst at the same time the rigid vessels cannot yield. Hence no lucky event can be hoped in this disease which is of its own nature so dangerous.

*If the disease is violent and attended with a stillicidium of
very red blood from the nose.*

This prognostic is found in *coac prænot.* no. 412, though a peripneumony is rarely terminated by an hemorrhage from the nose, yet it is certain from experience, that only a large hemorrhage from the nose proves beneficial in acute diseases, whereas a slight dropping of blood is almost always a bad prognostic, unless on the indicatory day it indicates a large evacuation on the subsequent critical day. Hence it is obvious why it is accounted a fatal sign in this disorder, especially if the blood is very red; for then it denotes that because the passage of the blood through the inflamed lungs is hindered the vessels of the head are so distended, that they begin to break whilst the thick blood which may be known from its deep red colour and its speedy concretion cannot be evacuated in a full and copious stream.

If the peripneumony is of the dry kind with red spots appearing on the breast.

This prognostic is also found in *coac prænot.* no. 416. where *Hippocrates* after these words, “ Those who in
“ dry peripneumonics, expectorate a small quantity of
“ concocted matter are in a dangerous state” subj. ins
“ red

“red spots appearing on the breasts, however broad
 “are fatal to such patients:” for they denote either
 that the cutaneous vessels are infarcted, or so ruptured
 as to discharge their contents. Besides in peripneumo-
 mic patients these spots soon after their appearance ge-
 nerally become livid, and are consequently signs of a
 beginning gangrene. In many diseases it is observed,
 that when the internal parts are affected, the change al-
 so appears on the skin. Thus when a violent inflam-
 mation of the intestines tends to a gangrene, there
 some times appear on the skin of the abdomen, red
 spots, which soon become livid. In a violent parony-
 chia when the disorder is lodged about the tendons of
 the flexor muscles of the fingers, the whole of the
 muscle whose tendon is affected is often covered with a
 red spot, which is generally deeply inflamed, and for
 the most part terminates in a gangrene or a trouble-
 some suppuration. When nature in a certain patient
 attempted a copious and salutary hemorrhage from the
 nose, *Galen* observed that an obscure red spot extend-
 ing from the right part of the nose along the cheek
 became gradually more and more conspicuous. Hence
 it is obvious, that in forming the prognostics of dis-
 eases, the physicians ought to attend to all such signs,
 though perhaps he may be ignorant of the connection
 of the sign with the thing signified. The faithful ob-
 servation of such things will always be useful, and per-
 haps posterity may discover the causes and reasons of
 them.

*If a violent coryza or sternutation either precede or
 follow it.*

It is certain from experience that a beginning coryza
 is frequently accompanied with a violent sternutation.
 But if we consider those things which happen in a co-
 ryzza, the reason will be sufficiently obvious, why this
 disorder preceeding a peripneumony, must be
 very prejudicial; for in a coryza the membrane cover-
 ing

ing the internal nostrils, fauces, aspera arteria, and lungs is turned, and generally slightly inflamed so that the nostrils are rendered so little that the patient cannot so much as draw the air through them. When therefore an inflammatory peripneumony is accompanied with such a disorder, the difficulty of respiration will be augmented by the concurrence of two causes which diminish the aerial cavities of the lungs; for by the inflammation and distension of the arterial vessels, the aerial vesicles of the lungs every where surrounded by them are compressed, whilst at the same time the coryza rendering the membrane which lines the internal surface of these vesicles tumid, by that means lessens their cavities. For this reason therefore, *Hippocrates* in *prognost.* and in *coac prænot.* no. 399. justly pronounces, "That it is a bad thing when any disease is either preceded or followed by infarctions about the lungs, or sternutations." If we at the same time consider that by the cough and sternutation which generally accompany a coryza, the inflamed lungs are violently agitated, and the impetus of the humours upon the obstructed parts augmented, the reason is obvious why we have just reason to dread least these tender vessels break and the inflammation terminate in a mortal gangrene.

If it arises from a burning fever.

In a burning fever the blood is deprived of its more mild and liquid part, and an inflammation appears almost through the whole of the body. If therefore in this disorder the blood begins to stagnate in the narrow cavity of the pulmonary artery, there seems to be little hope of a recovery; for either a sudden suffocation and death will ensue; or by reason of the violent agitation of the thick and acrid humours, an inflammation of the lungs happening in a burning fever, will soon terminate in a gangrene. But it is certain from

experience that a burning fever frequently terminates in a mottal gangrene.

The subsequent paragraphs contain the prefages drawn from bad spirits in this disorder.

If a bilious spitting with pus, begins after the sixth day.

This observation of *Hippocrates*, is no less true than surprizing; for he had so good an opinion of the bilious spit mixed with a little blood that he expected a perfect cure of a peripneumony from it. But condemned the bilious spit when it appeared mixed with pus after the sixth day; for such a spit seems to indicate that the inflammation of the lungs which happened in the beginning of the disease has degenerated into a suppuration; whilst in the mean time a fresh inflammation happening, produces such an unconcocted and yellow spit, so that the patient labours under a double misfortune.

If the spit from the beginning is very bloody.

A small quantity of blood mixed with a laudable and well concocted spit, is accounted an excellent sign in this disorder; for in this case the mouths of the arteries terminating in the trachæa being dilated, the obstructing matter is evacuated and the lungs excellently relieved. But when the spit is very bloody, it is to be dreaded, lest by the impulse of the blood, propelled by the whole force of the heart which is so contiguous, those tender vessels should be ruptured and pour out their contents: Hence the reason is obvious, why *Hippocrates* in *coac prænot.* no. 390. charter tom. 8. when treating of the spits of pleuritic and peripneumonic patients does not absolutely condemn the bloody spit, but only that which is highly bloody and appears in the beginning of the disease before the concoction and salutary expulsion of the morbid matter can be expected. Thus also *Aretæus* in lib. 2. cap. 1. *de Causis & signis*

Et signis. acutor morbor. when enumerating the most fatal symptoms of a peripneumony, tells us, " that the patient is generally afflicted with a dry cough ; but " if any thing is expectorated it is either a frothy " phlegm, an exquisitely bilious substance, or a matter mixed with a large quantity of highly florid " blood, and this bloody matter is worse than the " others."

If it is yellow and unmixed.

This spit is also condemned as bad by *Hippocrates* and *Aretæus* in the passages last quoted. But we are carefully to distinguish between this yellow and unmixed spit, and the yellow spit with bloody streaks, which is concocted, thick, of a nature analogous to pus and opaque ; for the unmixed yellow spit is nothing else but a diluted and almost pellucid mucus collected in the vesicles of the lungs, and tinged with a yellow colour. But such a spit seems only to be expectorated when a violent inflammation stops all the red part of the blood in the pulmonary arteries, and nothing but a yellow serum is transpressed, which is partly conveyed through the veins to the left ventricle of the heart, partly expressed into the trachæa through the orifices of the minute arteries, and thus not only dilutes the natural mucus of the lungs, but also tinges it with its own colour. Such a spit therefore denotes that a thick matter is accumulated in the lungs, whilst only its thinner parts are transpressed, so that the reason is obvious why it affords a bad prognostic in this disorder.

If the spit is white and round.

The spit of this kind is nothing else but the mucus of the lungs collected in the trachæa and by its continuance and the heat of the place, so inspissated as after its expectoration to retain the round figure which it

had acquired in the cavities of the lungs. Hence it is obvious that by such a spit none of the matter which oppresses the lungs is expectorated, for which reason it is by *Hippocrates* in the last quoted passage reckon'd among the bad spits. But this spit has in its own nature nothing malignant as those of the highly bloody, dark colour'd and sordid kind have. Hence *Hippocrates* in prognost. tells us, " That the yellow unmix'd spit is dangerous, whereas that which is only white, " viscid and round is only unprofitable."

If the spit is very frothy.

When mucous spits are so viscid, as long to retain the air with which they are agitated in the cavity of the lungs, they are said to be frothy. Mucous spits are however generally frothy, and consequently do not absolutely afford the worst prognostic. Thus *Hippocrates* in Lib. 3. *de Morbis*, Cap. 14. tells us that peripneumonic Patients in the beginning expectorate a thin and frothy spit, but he observes that frequently those spits have in progress of time become such as totally to remove, or at least to alleviate the disorder. And in Lib. *de internis affectionibus*, Cap. 2. the same assertions are found. We therefore principally condemn, that spit which is highly frothy, since it denotes that the humours are with great violence forced through the hardly pervious vessels of the lungs, and consequently that thicker and more tenacious humours than usual are expressed from the mucus, as is sufficiently evident in persons at the point of death; for in this last conflict of nature, a viscid whitish humour is expressed into the trachæa, and gradually ascending it flows out at the mouth and nostrils, like a kind of froth. This doctrine is confirmed by a beautiful experiment made by Doctor *Hales* in *haemastot. exper.* 11. for this gentleman with warm nitrated water diluted a certain quantity of blood immediately taken from a calf, when it was killing. Then he poured this mixture through a
tube

tube two foot long, and affixed to the pulmonary artery of the said calf, in order to see whether by the pressure of the fluid two feet high in the tube, it could pass from the arteries into the veins of the lungs. But he could perceive no quantity of this fluid transmitted into the veins, though the lungs were much dilated and very red. But at this time when the fluid acted upon the extremities of the pulmonary arteries, through which however it could not pass, a white froth flow'd through the trachæa. Hence *Bennet* in *theatr. tabidor exercit. diar.* 19. justly observes, " that " a frothy spit seems only to be the effect, of a kind " of internal sweat." From all which the reason appears why an highly frothy spit affords so bad a prognostic in a peripneumony.

If the spit does not allay the pain.

Since by the spit, when the matter of the disease attempts an evacuation by this way; that which obstructed the free motion of the blood through the lungs, ought to be removed, it is sufficiently obvious that all the symptoms depending upon this circumstance ought to be proportionably diminished. If therefore pain is present, which is not always the case in this disease, it ought to be allayed, the respiration which was difficult on account of the infarction of the lungs, ought to be rendered easier; and as on account of the less free passage of the blood through the lungs, the left ventricle receives a smaller quantity of blood, and consequently forces less through the Aorta and its ramifications, the pulse is often small and soft in this disease, so that when the free passage of the blood through the lungs is restored, the pulse ought to become larger and fuller. If all these effects, either accompany, or succeed the expectorations of spits, we may be certain that the material cause of the disease is expelled in this way. Hence *Hippocrates* in prognost. after enumerating the good and bad qualities of spit, lays the fol-

lowing down as a general rule. "All spits are bad, which do not allay the pain, and those of all others the best which do," by which he seems to insinuate, that though the various colours and consistences of spits contribute much to the formation of a prognostic; yet the alleviation of the symptoms, is of all other signs the best; even though the spits, should not be in other respects of a laudable quality. I have frequently observed, that in the beginning of this disorder, mucous and tenacious spits equally mixed through their whole substance with blood, have not only afforded a considerable relief, but also soon produced a perfect cure. In such cases, that part of the red blood which before stagnated in the inflamed vessels, seems to have passed through their dilated extremities into the bronchia, and to have been expectorated by spit, before by a longer stay it could be changed into concocted spit.

If it is brown, clay coloured, sordid, black, livid, unequal and æruginous.

If we consider that state or period of an inflammation which tends to a gangrene, it will be sufficiently obvious that these kind of spits, denote a gangrenous corruption already begun in the lungs, and are consequently very bad. *Hippocrates* in prognost. condemns these spits and especially those of a black colour. Whilst the flesh of animals putrify in an open warm and moist air, we see they gradually lose their lively colour, become brown, livid and about the margins sometimes green or even æruginous. The like changes must happen in the lungs when a mortal gangrene begins to prey upon this vital organ which is hot, moist and exposed to the air: hence a sordes of similar colours, will be expectorated by spit. But the worst prognostic is to be deduced from these spits, when all the preceding signs indicate that the peripneumony has been very violent; for in this disorder even when
it

it is not infallibly mortal, bad spits have sometimes been expectorated. Thus *Hippocrates* in prognost. lib. 1. cap. ult. tells us, "that livid spit may be produced by a little blood mixed with a large quantity of saliva, which is not immediately expectorated but remains within till it is half putrified." Thus also spits of a bad colour may arise from extravasated fluids, collected and long retained in the trachæa, though the substance of the lungs is not as yet affected.

If neither the fever nor difficulty of breathing remit, the patient dies on the seventh or ninth day.

We have already observed that those patients die soonest, in whom the whole lungs, together with the heart are inflamed. But when the disease is violent without making very quick advances, the patient generally supports the shock of the disease longer. In this case it is the duty of the physician daily to advert to all circumstances in order to discover whether any signs appear, which indicate that the matter of the disease is resolv'd, mov'd and dispos'd either to an evacuation or a salutary translation. If none of these appear, and there is neither a remission of the fever, nor of the difficulty of respiration, but on the contrary all the symptoms are increased, we may prognosticate that the disease will terminate in death which generally happens on the more remarkable critical day, which is the seventh, or the ninth which is the subsequent critical day; unless the fever abates on the seventh day, *Hippocrates* in Lib. *de locis in homine*, cap. 7. tells us that suffocation and death will happen either on this day or on the ninth. But that the physician may as certainly as possibly prognosticate the fatal day, *Hippocrates* in prognost. after enumerating all the good and bad signs, affirms that a true prognostic can only be obtained from a faithful comparison of all these together.

About the time of the patient's death the pulse is defective, all the parts of the body are cold, except the breast, head and neck, which are excessively hot, and the cheeks are of a redish or of a livid colour.

So long as any blood can be convey'd through the infarcted arteries of the lungs, life, though reduced very low, still continues and the pulse beats. But as only a small quantity of blood can be thus convey'd into the left ventricle of the heart, the heat cannot be communicated along with the blood to the extreme parts of the body. Hence the extremities become cold first, and then almost all the lower parts of the body. But as the right ventricle of the heart, and the large venous receptacles adjacent to it are highly distended with blood, and the lungs infarcted, hence the breast is in a particular manner hot, and for the same reason the head and neck retain their heat longer, and the cheeks become red. But when at the very point of death, the blood becomes stagnant in the superior veins, the cheeks become livid, and the face though turgid and livid begins to grow cold. Hence *Hippocrates* in prognost. observes that it is a fatal sign in this disease, "when the body is unequally affected with heat, when the abdomen and sides for instance are excessively hot, whilst the fore-head, arms, and legs are cold." But when no more blood can be transpressed through the lungs, the right ventricle of the heart remains full, ceases from its action and death is present. Though the like phænomena frequently appear in those who die of other disorders, yet it is certain from experience that the proximate cause of death, and the last effect produc'd by almost all mortal diseases is a peripneumony.

849. The cure of a peripneumony is to be varied according to the different stages of the disease, and its symp-

symptoms ; so that what is beneficial at one time of the disorder, is injurious at another.

850. If therefore, in a peripneumony, (830, N. 1.) the habit is lax, the humour mild, the viscosity not great, and the part of the bronchia and lungs affected, not considerable, the patient is to use rest of body and mind, a tepid moist air, a vapour-bath pure water, applied to the pulmonary region, the nostrils, the mouth, the feet and the legs, slender aliment, and light drink ; aqueous, nitrous, farinaceous medicines, and preparations of honey. Thus,

Take of barley-water, forty ounces, of nitre, two drams, and of oxymel, four ounces: mix, and let the patient drink two ounces warm every quarter of an hour.

851. But if in a peripneumony, (130, N. 2.) a speedy, free and copious expectoration of yellow thick spit, which alleviates the pain, amends respiration, renders the pulse larger and fuller, and gradually becomes more mild and white, the last mentioned medicines are not only to be used, but also, such as are of an emollient and depurating nature, such as promote expectoration, and are gently restorative, and steams. In this case we are to abstain from venesection, purgatives, sudorifices, and every other thing capable of disturbing expectoration.

Take of pollitory of the wall, agrimony, and dandelion, each one handful ; and of the bruised seeds of white poppies, and fennel, each one ounce, and of liquorice one ounce and an half : boil in fifty ounces of water and exhibit in the same manner, and for the same purposes, with the former.

852. If a peripneumony (830. N. 4.) is attended with a bilious flux, which affords ease, and in which the matter

matter eliminated resembles the spit above described; mild and emollient clysters are to be used; gentle fomentations are to be applied to the abdomen, emollient and gentle laxative decoctions are also beneficial; taking, at the same time, the other measures before recommended. (850, 851)

853. If in a peripneumony, (830, N. 4.) a copious, thick, and hypostatic Urine, with a sediment at first red, and then gradually becoming whitish is, to the relief of the patient, discharged before the seventh day, let all the measures already prescribed (850, 851, 852) be taken but let the baths for the feet be added, and fomentations of the kidneys by emollient clysters, and the application of linen cloths externally: let the patient, also drink decoctions of a gently abstergent and diuretic nature. For this purpose.

Take of the roots of grafs, butchers-broom parsley and fennel, each two ounces; of masterwort, two drams and of the bruised seeds of burdock and parsley, each one ounce: boil with forty ounces of water, and exhibit for the same uses with the former.

854. If the inflammation is recent, great and dry, in a robust habit, a little before sound, and habituated to exercise, it may be discovered by the signs already enumerated; (825, 826) and we are forthwith to have recourse,

1. To speedy and copious venesection, which is to be instituted according to the degree of the disease, and duly repeated, that the quantity of thick blood may be lessened and proper room made for diluting liquors.

2. To vapour-baths of an emollient nature, continually applied to the pulmonary region, and frequently to the other parts of the body.

3. To

Of a true Peripneumony. (331)

3. To diluent, resolvent, emollient, laxative, antiphlogistic, nitrous, and anodyne decoctions, to be often drank warm, and in small quantities.

4. To mild antiphlogistic clysters: And,

5. To a slender diet consisting of antiphlogistic substances.

855. If the inflammation, being great, accompanied with a fever, and other violent symptoms, lasts beyond the third day, and if the signs of an inflammation tending to a suppuration (833, 854, 835) are present, there is always much danger, though the disease may be protracted so long, as to afford a due time for the cure. In this case,

1. We are to use no venesection, or if some important circumstances call for it only a small quantity of blood is to be taken away.

2. We are to use a slender food, but somewhat in-crassating and consisting of maturing substances, as pot-herbs, farinaceous vegetables, peas, and ripe autumnal fruits.

3. Till the fifth day from the beginning of the disorder, we are to use baths for the region of the lungs, consisting of emollient and maturing ingredients. See (809, N. 5.)

4. On the fifth and sixth days we are to use these baths, adding sorbitions, which gently excite a cough, and do not produce repletion, that thus, on the seventh day, the part may be relieved by a discharge of concocted pus, the vessels relax'd and life sustained. For this purpose,

Take of the vinegar of squills, six drams; oxymel of squills three ounces; sal polychrestum, one dram, barley water eight ounces; and distilled hyssop water four ounces: mix all together, and let the patient drink one ounce every half-hour.

Take of coffee two pints; of honey two ounces,
and

and of elder-vinegar, half an ounce: mix altogether, and let the patient drink as much as he pleases warm.

856. If sufficient signs inform us, that an abscess is formed in the lungs, (835) its breaking into the aspera arteria is to be accelerated; after which the ulcerated part is to be quickly and safely depurated.

857. The breaking of the abscess is brought about, if, after the use of many soft and subpinguious aliments, and soft wine, the lungs already suppured, (836) and prepared (855) by warm steams, are agitated either by crying, coughing, expectorants, concussion in a ship or coach.

858. But as soon as there are any signs, that the apoplex is broken, we are to use a milk, and mild, and not easily putrefying, vegetable, diet: then in the day-time, we are to use aperient and deterfive medicines; and, towards evening, gentle opiates: emollient steams, sailing in a ship, riding on horseback, or in a coach, are, also, to be used.

Medicines of an aperient and deterfive quality, proper for open ulcers of the lungs, are these following: the leaves of the common, black, white, and golden maidenhair, agrimony, lady's-mantle, brooklime, betony, meadow-daisy, borrag, oak of jerusalem, bugle, spleenwort, germander, ground pine, succory, dandelion, endive hedge mustard, fennel, fumitory ground-ivy, noble liverwort, star liverwort, alexanders; St. Johnswort, Hyssop, woad, lettuce, Hart's tongue, white horehound, devil's-bit, moneywort, rest-harrow, primrose, self-heal, sage of jerusalem, soapwort, scabious, water germander, solomon's-seal, flaxweed, colts-foot, garden and wild valerian, vervain, veronica, periwinkle, and goldenrod.

The same intention is answered by gum ammoniac, galbanum, opopanax, sarcocolla mastic, myrrh, olibanum, and turpentine.

Take

Take of the recent leaves of agrimony, golden rod, betony, and garden valerian, each one handful; of white horehound, one fourth part of an handful; of the five aperient roots, each one ounce; of the flowers of the lesser centaury, agrimony, and St. John's wort each one handful: boil in four pints of water; of which let the patient drink two ounces every two hours:

Or,

Take of the roots of burdock, china and sarsaparilla, each three ounces, boil in water for half an hour; then add three ounces of sassafras wood; and when they have boiled a little, add to three pints of the decoction two ounces of the syrup of the five aperient roots. Its use is the same with that of the preceding.

Taste of the best and most transparent myrrh, two drams of the yolk of an new laid egg, one scruple: to these, when duly triturated together in a glass mortar, add of the best frankincense, two scruples: make into pills, consisting of three grains each, of which let the patient take one or two before the use of the Decoction.

Take of the best myrrh two drams; and of spermaceti one dram: make into a powder, to be divided into twelve equal doses; one of which let the patient take every morning and evening with the decoction.

Take of myrrh, and olibanum, each one dram; and of the purest Honey, two ounces: mix, and let the patient take one dram every hour.

Gentle opiates, to be used in the evening, are these following:

Take

Take of the pilulæ de cynoglossò, one scruple; form into six pills; of which let the patient take one or two in the evening, before going to bed.

Take of the styrax pill, the same quantity: to be used in like manner, and for the same use.

Take of opium cut into thin slices and gently dried, one grain; of red coral, twelve grains; and of olibanum, six grains: make into a fine powder to be used like the others, before going to bed.

Take of the syrup of diacodium, half an ounce; of the aqua vitæ of matthiolus, one dram; and of distilled hyssop water, one ounce: make into a draught, to be taken in the Evening.

Take of opium, one grain: make into two pills; one which is to be taken in the evening.

Take of opium, one grain; of the syrup of maiden hair, four drams; and of the water distilled from the flowers of the red poppy, one ounce; make into a draught.

For an emollient steam:

Take of the leaves of mallows, marsh-mallows, and pellitory of the wall, each two handfuls; and of the powder of linseed two ounces: boil in water and let the patient receive the steam, as he draws in the air.

859. If there appear signs, (838) that the inflammatory matter (837) is become purulent, reformed by the veins in the lungs thence conveyed to the blood, and deposited on some other part, whence the lungs are relieved, and the part which receives the matter oppress'd without any certainty whether the matter will

will tend, then the patient is to use a light, fluid, gently aromatic and some what vinous diet. His body is to be preserved in a state of rest. Let his medicines be emollient, and gently aperient; let his lungs be treated with emollients. See the second decoction (858) Thus the peccant matter will either be determin'd to some other part or farther dissolved and eliminated. For this purpose,

Take of the expressed juice of recent chervil, and of sweet milk, each four ounces; and of the syrup of hyssop, one ounce: make into a mixture; of which let the patient drink one ounce every two hours.

860. But if to the signs (838) which indicate, that such abscesses are about to be formed, those (839, 840) which signify a determination of the matter are joined, the last mentioned measures (859) are to be taken; and, at the same time the parts (839, 840) indicated for the deposition of this matter, whether ears, or legs, are to be so treated by friction, relaxation, stimulants, and aperients, that they may resist less, and attract the matter more.

861. If the matter is determined (841) to the liver, the same measures are to be taken with those prescribed (859, 860) when the abscess is absorb'd, without any certain prognostic whether the matter tends: but at the same time let aperients somewhat stronger, saponaceous and hepatic substances be used: then let clysters, and fomentations of the like ingredients be prescribed.

Take of the greater soapwort, two handfuls; of recent endive, four handfuls: and of the flowers of wild succory, three handfuls: boil in three pints of water and of the expressed decoction, let the patient drink two ounces every two hours.

862. When

862. When a peripneumony terminates in a callous or scirrhus tumour of the lungs, (843) it is rarely susceptible of a cure; though it may sometimes yield a little to external and internal emollients, to riding on horseback, or in a coach.

863. When a peripneumony, degenerates into a gangrene, (844) it is absolutely incurable.

864. If in a peripneumony beginning to be carried off by a spit, the expectoration is stopt, we are immediately to use all our endeavours to recal it. The causes which retard this expectoration are generally an excessive cold suddenly admitted to the body; and excessive driness of the parts all over the body; a burning fever succeeding; heating medicines; a discharge of stools, which do not prove critical; excessive sweating; and violent commotions of mind.

865. Immediately upon this, a fresh inflammation arises from a suppression of the matter, and an increase of it from congestion: hence are forthwith produced the same symptoms which arise from a primary peripneumony; (825, 826) but accidents of this nature generally soon prove mortal to patients already weakened.

866. When a suppression of spit in a peripneumony, beginning to be carried off by that means, happens, this misfortune (864) and its consequences (865) are prevented, by the steam of some hot, moist, and emollient substance, continually drawn into the mouth and nostrils, and by that means conveyed to the lungs, and by air artificially rendered similar, or of a like quality, with this steam: the liberal use also, of liquors of a like nature, especially when prepared with honey and vinegar, is highly beneficial. The same intention is also, promoted by gently resolvent antiphlogistic medicines, such as diaphoretic antimony with fixed nitre and gentle Opiates; by avoiding sweat; and, principally, by preserving the calmness and tranquillity of the mind. For this purpose,

Take

Take of simple oxymel, three ounces; of the syrup of the five aperient roots two ounces; of a decoction of ground-ivy, ten ounces, and of pure nitre one dram: make into a mixture; of which let the patient take one ounce every hour.

Take of pure landanum two grains; of the flowers of sulphur, sperma ceti, and unwashed diaphoretic antimony, each one dram: reduce to a fine powder, to be divided into twelve equal parts one of which the patient may take every three hours, with an ounce or two of the preceding mixture.

Take of the flowers of sulphur, two drams; of oilibanum, one scruple; of sperma ceti half a dram, and of unwashed diaphoretic antimony, one dram. Reduce to a powder, to be divided into twelve doses, of which let the patient take one every hour with an ounce of the mixture.

Take of the recent expressed oil of sweet almonds one ounce and a half; of the syrup of violets, virgin honey, and the yolks of new laid eggs each half an ounce, form into a mixture; of which let the patient take half an ounce every hour, till the expectoration returns.

Peripneumonia notba. A spurious peripneumony.

867. This disorder is frequently produced in the winter by an excess of cold, and in the spring by an excess of heat. It generally arises from a viscid phlegm formed in the blood, (69, 72)

1. By farinaceous, crude, austere, and ill concocted aliments.

2. By a want of laudable Blood:

Z

3. By

3. By a weakness of the vessels, viscera and bile.
4. By a diminution of animal motion :
5. By a dissipation of the more liquid parts of the fluids in consequence of a relaxation of the secretory vessels.
6. By a retention of the grosser parts of the fluids, in consequence of a weakness of the instruments of excretion.

This phlegm gradually stuffs the lungs, till the disorder degenerates into this terrible, and, often unexpectedly mortal disease.

868. When this disorder is of a considerable standing it produces various effects (72, 73, 74) in the body, and especially those peculiar (825, 826) to a slow peripneumony : hence its cure must necessarily be difficult.

869. For venesection, instituted so much as is necessary in some cases of a true peripneumony, (854) is in this disorder highly prejudicial on account of the weakness of the viscera, and a viscosity of the juices : hence, what at first seems to afford relief, soon after increases the symptoms.

870. Attenuants in this case so much esteemed whilst they augment the impetus on the pulmonary vessels, often increase the thickness and impaction of the obstructing matter; by which means they soon render the disorder mortal.

871. This disorder is frequently incident to old persons, those of pituitous, cold, and catarrhus habits, or such as labour under frequent coryzas. It is generally produced by all those causes, which, by quickly moving the stagnant matter act upon the lungs, such as running, crying, singing, drinking hard, especially of heating liquors, high feeding ; the heat of a fire, of a bath, or of the sun, especially if the body is suddenly exposed to cold after such an heat.

872. This disorder at first deceives the unwary patient by its fallacious lenity, for, beginning with a slight sensation of fatigue and weakness, a prostration of almost

most all the faculties of the mind a difficulty of breathing, and oppression of the breast. It excites so gentle commotions, that the heat and fever scarcely indicate any danger, soon after wandering horripulations, and the paroxysms of a gentle fever appear. Hence the difficulty of breathing, and weakness, suddenly increasing death happens, though hardly any signs of it could be discovered either in the urine, or the pulse.

873. This disorder is most prudently cured.

1. By letting blood from a large orifice:
2. By seasonable injections of clysters, which are to be repeated daily, till the symptoms evince that the lungs are relieved. For this purpose,

Take of honey three ounces; of nitre one dram; one yolk of an egg; and of barley water eight ounces: make into a clyster.

3. Let the patient use a slender diet of flesh broth, especially such as are impregnated with mild acids; and let him drink a thin liquor consisting of water and honey.

4. Let him use the steams and suffumigations described in the true peripneumony (866): he must, also, drink diluting, detergent, and gently aperient decoctions: his legs and feet are to be bathed, and large vesicatories applied.

Take of the roots of fennel, two ounces; of the roots of grass, four ounces; of the leaves of pellitory and agrimony, each one handful and an half; of the bruised seeds of white poppy, one ounce; and of liquorice an ounce and an half: boil for a quarter of an hour in two pints and a half of water; of which let the patient drink two ounces every two hours.

874. *From what has been said (820 to 874), we can assign a Reason why a peripneumony is rarely incident to children and women.*

Not only in children but also in most women, the compages of the vessels is weak and infirm, in consequence of which their contained fluids are less condensed. Hence in such persons the blood appears to be more diluted and less coherent than in others. Their vessels are at the same time easily dilated in consequence of which their bodies are softer and more turgid than those of others, as painters and statuaries justly observe. For this Reason *Hippocrates in coac prænot.* no. 512. charter tom. 8. informs us, that peripneumonies and pleurifies rarely happen before puberty.

As also why it hardly ever happens to men the structure and fabric of whose solids are lax.

Some men by previous diseases, a sedentary life, or a peculiarity of constitution have so small a cohesion in the solids that they hardly act upon the contained fluids at all, or at least not with that degree of efficacy as is requisite to the strength and vigour of a man. Hence in such men almost all the same things happen as in women, and they are rarely obnoxious to inflammatory diseases.

Why in such persons a peripneumony is easily and almost spontaneously cured.

If in such persons the blood should become stagnant in the narrow cavity of the pulmonary artery, since it never acquires that density observable in the blood of strong and robust bodies, it is generally spontaneously resolved by the heat of the place, or easily attenuated by the use of diluting liquors. Be-
side

fides as the lax vessels of such persons easily yield to the distending fluid, so when the adjacent heart by the expelled blood acts upon the obstructed parts, the obstructed vessels will be dilated, and the obstructing matter carried forwards till it either passes from the arteries into the veins, or is conveyed through the extremities of the small arteries terminating in the cavities of the lungs, and thence expectorated by spit. And it is certain from experience, that an inflammation of the lungs may be happily terminated in both these manners, nor is the like successful event of a peripneumony to be doubted of, where a due softness and laxity prevail in the whole body.

Why the contrary happens to robust persons and those who are accustomed to violent exercise.

In such persons every thing is contrary to what it was in the others; the blood for instance, is thick, compact, diluted with a small quantity of serum, and soon formed into concretions after it is taken from the vein. The vessels also are firm, strongly contracted and do not easily yield to the impelled fluids. Hence such persons are very subject to inflammatory diseases, which when they seize them are not easily cured. Hence *Hippocrates in coac prænot.* no. 398. tells us, “ that robust persons and such as are accustomed to violent exercise sooner die of pleurifies “ and peripneumonies, than those who lead an idle “ sedentary life.”

From what has been said it is also obvious, that this disease is produced by almost every previous disorder, before the patient dies of it; and consequently that a peripneumony is the proximate cause of death, and the last effect produced by almost all mortal disorders.

The smallest degree of life consists in the action of the heart as yet contracting and dilating itself. How-
Z 3 ever,

ever, the heart cannot be contracted without expressing the blood contained in its cavities; but in an human creature after it is born, all the blood in the right ventricle of the heart ought to pass through the lungs. When therefore a person is about to die the weak action of the heart, which is soon after to cease cannot surmount those obstacles which arise from the narrowness and resistance of the pulmonary vessels. The blood will therefore begin to stop in the lungs, whilst its thinner part being conveyed into the veins will pass to the left ventricle of the heart, and thus continues a weak and languid degree of life. Every moment therefore the lungs will be more and more infarcted with blood till such a resistance is made to the right ventricle of the heart that it can no longer empty itself, but will remain distended and in a state of rest, and then death is present.

Now if we consider the phænomena which appear in persons at the point of death, it will be sufficiently obvious that the last effect produced by almost all mortal diseases is a peripneumony; for that last conflict between life and death in which men are said to be in agonies produces an intolerable uneasiness, which proceeds from an obstructed egress of the blood from the heart. The disagreeable noise made by the lungs of dying persons indicates the infarction of the lungs, which is also farther proved by the deep sighs and the uneasy breathing accompanied with an elevation of the scapulæ and a quick motion of the nostrils: We may therefore conclude that a peripneumony arises from any other previous disease before the patient is cut off by that disease; for if we except those cases in which the heart being as it were rendered paralytic, life ceases in a moment as in perfect syncope arising from violent passions, sudden and profuse evacuations or excessive old age, death is always preceded by this laborious struggle which is worse than death itself.

A P L E U R I S Y.

875. **A** Pleurisy is said to be present when the patient labours under an acute, continual fever, (564, 567) accompanied with an hard pulse, an acute pungent, and inflammatory (382, no. 3,) pain which in inspiration is greatly increased, but in expiration, or during the retention of the breath, milder; as it is likewise, when without any motion of the thorax, respiration is principally perform'd by the assistance of the abdomen: this disorder is generally accompanied with a perpetual cough, which excites such an intense pain, as to endanger a suffocation.

876. When with these symptoms, symptomatic expectorations are made from the lungs, the disorder is called a moist pleurisy; but when such expectorations are wanting, it is called a dry pleurisy.

877. This disorder affects all the parts of the internal integuments of the thorax, the whole of the pleura, the whole of the mediastinum; and consequently, the anterior, posterior, right, left, inferior, exterior, and deeper parts but especially the sides, are affected by this disorder.

878. When the membrane internally lining the ribs is the seat of the disorder, it is called a true, or legitimate pleurisy: but if the intercostal muscles or those lying above them, are affected, the disorder is called a spurious, or bastard pleurisy.

879. This disorder principally attacks adult persons of sanguineous habits, those who eat and drink too copiously, who use violent exercise, who are rarely afflicted with acid eructations and who are disposed to inflammatory disorders in the spring especially, when an intense heat suddenly succeeds a severe cold; or in the winter, when excessively cold winds blow: and in such cases the disorder is called an idiopathic pleurisy.

880. But a pleurisy arising from the motion of the matter of a previous inflammatory disorder and its

translation to the parts already mentioned (877, 878), is called a symptomatic pleurisy.

881. This disorder, has for its antecedent cause,

1. Every thing capable of generating an inflammation of any kind (375 to 380).

2. Every thing which, in a particular manner, determines this general cause to the pleura; such as the nature of the patient according as his intercostal Arteries are narrower or harder; a previous disease, which leaves a disposition to the same misfortunes, such as a scirrhus or callus of the pleura, or an adhesion of the lungs to that membrane; the nature of a raging epidemical disorder; a cold air conveyed forcibly through small chinks to the naked body, previously over-heated by exercise, or the influence of the fire, cold liquors copiously and suddenly drank, when the body is over heated and cold northerly winds in the winter-time.

3. A translation of the inflammatory, ichorous, or suppuratory matter, before lodged in the whole body or in some particular part, to these parts of the thorax; as in the measles, the small pox, ulcerous tumours, large and broad ulcers which suddenly disappear in consequence of an absorption of the peccant matter into the veins.

882. This history (875 to 882) of the disease together with an account of its several stages (883 to 907), and a dissection of those who die of it, sufficiently evince, that it is an inflammation of the sanguineous kind (371) in those parts of the thorax already mentioned (877, 878), and generally arising from a preceeding acute fever.

883. Hence (881, 882) we may easily deduce the history of this disease; for it often begins with a pretty keen appetite for aliments, a coldness and horror; a weakness, lassitude, and fever; in process of time it is attended with a moderate heat, which gradually becomes excessively intense; a thirst, a total loss of appetite; a pain at first mild, but gradually becoming intolerable: and a considerably injured respiration. At
its

its height it is attended with a violent, though less perceptible fever, on account of the respiration, which is check'd, and almost suffocated, by reason of the intense pain. Hence the physician is often shamefully mistaken; and the disorder terminates in various manners, which depend upon various causes, but especially on the diversity of changes to which inflammations are subject, mentioned (386, to 393, and 492, to 500) on the nature of the parts affected; (877, 878) and a due consideration of the following circumstances: whether there are more or fewer parts (877, 878) affected at once? whether the impetus of the blood is violent? (92, to 102) whether the malignity of the primary disorder is great (564, 567) and accompanied with a train of unlucky symptoms? and especially, whether the respiration pulse, and excretions, recede from their natural state?

884. A pleurisy, like other inflammations, terminates in the recovery of the patient, some other disorder or death.

885. This disorder, terminates in the recovery of the patient, either by the assistance of nature, or of art, whilst the disease is as yet simple and recent.

886. It is cured by the assistance of nature, either by means of a benign resolution or by a concoction and excretion of the peccant matter.

887. A pleurisy is cured by resolution (386, 401) when the humours are mild, their motion regular, the obstructing cause not too obstinate and the obstruction small, for in this case the benignity of the symptoms indicates nothing to be done, but only to alleviate the disorder by light aliments, mild aperients and softening fomentations. See the decoctions in (873, N. 4. and 864, 859).

888. A pleurisy is cured by the concoction and excretion of the peccant matter;

1. When, by the hæmorrhoidal veins, a proper liquor

quor is in a due quantity, and at a proper time, discharged.

2. When a copious thick, hypostatic, strangurious, red urine, with a white sediment, is discharged to the relief of the patient, before the fourth day; such a discharge of urine, also cures a dry pleurisy.

3. When, before the fourth day, copious bilious, and yellow stools are discharged to the relief of the patient.

4. When ichorous, purulent, fistulous, or long flowing abscesses begin, before the sixth day, behind the ears or on the legs.

5. When the pain of the side is translated to the shoulder, arm, or back, and accompanied with asthpor, pain and heaviness of these parts.

6. When the spit is in some measure freely discharged, affords relief, is unattended with a coryza, copious at first, resembling pus, soon after white, appears before the fourth, day is continued, or returns immediately after its suppression, for in these cases, the patient recovers either on the ninth or eleventh day.

889. When the signs accurately observed indicate, that the now described (888) state of a pleurisy is present, then the physician is to make no alteration, but suffer every thing to remain as it is. For this reason neither venesection, nor evacuation nor any other change, are to be attempted. The patient is therefore first to use soft light food, rest of body and mind, a temperate and hot moist air, spontaneous sleep, or such as is procured by gentle narcotics, softening, thin, and gently aperient medicines. Then, secondly, each particular evacuation, which gives relief, is to be promoted.

When, therefore, in a pleurisy, (888 N. 1.) a proper liquor is in a due quantity, and at a seasonable time, discharged from the hæmorrhoidal veins, the anus is to be fomented with emollient, laxative, and aperient fomentations; or if these should prove ineffectual, leeches are to be applied.

When

When (888 N. 2.) the urine is copious, thick, hypostatic and such as has been already described, fomentations, of the same nature with those now recommended, are to be applied to the kidneys, perinæum, and hypogastrium; lenitive and diuretic aperients are to be used; the patient is to be kept in an air somewhat cool; sweating, and other evacuations, are to be avoided; and mild diuretic clysters to be injected.

If in a pleurisy, (888. N. 3.) yellow and bilious Stools are copiously discharged before the fourth day, to the relief of the patient, the like emollient fomentations are to be applied to the whole abdomen, laxative clysters are to be injected, and a laxative regimen prescribed.

When (888. N. 4.) ichorous, purulent, or fistulous abscesses appear (838) before the sixth day, behind the ears, or on the legs, and if the part affected (839, 840, 841) is discovered, then the patient is to use (859, 860, 861) a light, fluid, gently aromatic, and somewhat vinous diet, to remain in a state of rest, and to have emollient and gently aperient medicines prescribed him. The part also to which the matter is determined, (888. N. 5.) ought to be treated with suction, relaxation, stimulating and aperient medicines, that thus it may resist less and attract more. Then somewhat more strong aperients may be used; as, also saponaceous and hepatic substances to which may be added clysters and fomentations consisting of the same. Then the aperture made in the abscesses is to be kept open for some time, by suppurating medicines.

When (888. N. 6.) the spit is in some measure freely discharged, affords relief, is unattended with a coryza, is copious at first resembling pus, but soon becomes white, or appears before the fourth day, is either continued, or returns immediately after its suppression, then the whole treatment is the same as in a true peripneumony. See (850, 851)

890. By art a pleurisy may be cured without any other

other disease intervening especially by the following method : if a recent pleurisy, (875) before the end of the third day, is accompanied with violent symptoms (875, 883) of the dry (876) kind, and found in robust, exercised and dry habits, without any hopes or presence (887, 888) of a resolution, or of the concoction and excretion of the peccant matter ; then,

1. A large quantity of blood is speedily to be taken from a large vein, with a large stream, and from a large orifice the patient in the mean time, lying at rest on his back, and quickning his respiration, as the blood flows, by coughing and sighing. The part affected is, in the mean time, to be fomented, and gently rubbed. The discharge of blood ought to be continued, till the pain is considerably remitted, or the first signs of a deliquium brought on. The venesection is to be repeated, according to the return of the symptoms it was intended to remove. The absence of the pellicle, (384) formed upon inflammatory blood, determines when 'tis time to stop. And,

2. We are immediately to use fomentations, baths, hot applications, liniments, and plaisters, to relax, resolve, mitigate, and avert the pain. (395, N. 6. 398, N. 3.)

Take of the leaves of mallows, marshmallows, and pellitory of the wall, each two handfuls ; of garden poppies, and henbane each one handful, of the leaves of elder, chamomile, and melilot, each three ounces : boil in sweet milk for a fomentation.

Hence may be learnt what baths and tepid applications are proper.

Liniments for anointing the sides are these following.

Take of the sugar of lead, four drams ; of vinegar, six drams ; and of the oil of roses by infusion,

on, one ounce: make into a Liniment, to be applied to the side.

Or,

Take of the unguentum populneum, two ounces.

Or,

Take of the emplastrum diapompholigos, a sufficient quantity: spread on leather, and apply for the same purpose.

3. Then such medicines are to be exhibited as dilute, resolve, relax, mitigate, refrigerate, and alleviate, or soothe pain, which, when taken warm, in a moist form, in a large quantity and determin'd to the part affected, are highly beneficial, and may be varied according to the symptoms; always taking care, that such ingredients be chosen, as resist a putrefaction.

Take of the leaves of colts-foot and mallows, each two handfuls; of the leaves of wild poppies and marshmallows, each half a handful; of the roots of parsley and sarsaparilla, each three ounces; of bruised linseed four drams; of the bruised seeds of lettuce and ladies-thistle, each one ounce: boil in three pints of water, of which let the patient drink two ounces every hour.

Or,

Take of the four greater and smaller cold seeds, each three drams of white poppy seeds two ounces; make into an emulsion with barley water; with every fourteen ounces of which mix, of the purest nitre, one dram and an half; and of the syrup of maidenhair, one ounce. Let the patient drink one ounce every hour, or every quarter of an hour.

Or,

Or,

Take of the distilled waters of the flowers of the red popy and elder, eight ounces; of the distilled water of borragé, five ounces; of crabs-eyes, two drams; of *sal prunellæ*, one dram; of the syrups of flowers of red and white poppies, each one ounce mix and let the patient drink two ounces every half-hour.

4. A light soft, refrigerating, and antiphlogistic diet is necessary.

5. Every thing which dries, heats, or increases the impetus of the blood, is to be avoided, such as the heat of the air, of the sun, of the fire, or of the bed, as also heating aliments and medicines.

891. How long these measures (890) are to be persisted in, or repeated, is to be known from the obstinacy of the disease, its remissions, or its change (888) into a state of health and recovery.

892. A pleurisy degenerates into other disorders, first, when the inflamed part suppurates; which we know, first from the general signs (387, 432) of a suppuration, secondly, from the obstinacy of the pain, cough and fever beyond the fourth day; thirdly from the absence of the signs of a resolution and cure; (887, 888) and fourthly from the neglect of the proper measures of cure. (890)

893. That an apostem is already forming is known from the common signs specified in (405) but especially in this case, from the often recurring horror without any manifest cause and the signs specified in the peripneumony. (834, 835) Hence it is, also, known, when an apostem is actually formed; which sometimes is evacuated by spit, through the lungs.

894. But such an abscess is sometimes broken by its own pus, which drops into the cavities of the breast; whilst the ulcer as new pus is formed and accumulated, fills the whole cavity of the breast, and consumes

consumes the whole body. That such a misfortune has happened, may be known from the preceeding signs: (892, 893) from the duration of the misfortune beyond the seventh day; from the sudden remission of the symptoms, and their quick return. Hence arises a phtisis.

895. When, therefore, by the signs already enumerated, (892, 893) we know that the inflammation is forming into an abscess, the part, before painful, when known, is to be corroded by caustics; an incision is to be made quite to the pleura, and kept open by suppurative medicines, that the matter being forced outwards by the action of the lungs, may be discharged from the pleura, and prevent an empyema; then the part is to be softened till it is quite cleansed.

896. But if there are signs (302, 894) that the apertem being broken, the pus has already formed an empyema, the thorax is forthwith to be opened (303 N. 5.) the pus eliminated, (303) and the wound cured (304) by proper regimen and medicines.

897. A pleurisy, also degenerates into some other disease, when for instance, the part affected becomes scirrhus, or callous, or when the lungs adhere to the pleura; and when the last misfortune happens, there is produced an asthma, a dyspnæa and a dry cough, especially after eating or exercise; from which signs if present without those of an (863) abscess or empyema, (896) already specified, the disorder is known, especially, if they continue long, with any great increase of the disorder.

898. This misfortune (897) when known, is either absolutely incurable, or to be removed by abstemious living, exercise, a free airing in the country, violent and often repeated riding.

899. Such an inflammation also, degenerates into a gangrene, first of the side, and then of the lungs, (844) by reason of the contiguity of the latter with the former.

900. This last mentioned disorder arises either from the

the violence of the pleurisy, or from the acrid and putrid matter accompanying it.

901. That a gangrene of the lungs is about to happen, or is already begun, may be known from various circumstances: If, for instance, the spit is purulent, and somewhat bilious, round, purulent, and somewhat bloody, black, and fuliginous, dirty, or fetid; if there is a great noise in the breast accompanied with a sadness of the countenance; if the eyes are of a yellowish red colour full of sordes, and dim sighted; or if the spit is at first various; then the patient often dies on the third or fifth day: if there is a stertor; none, or at best a difficult expectoration, a languid pulse, and an high coloured urine, if there is a flux, the matter of which is liquid, fetid, putrid, and symptomatic; if a violent peripneumony comes on; if a second paroxysm succeeds the first; if the blood is highly florid, when flowing from an opened vein, and without an inflammatory pellicle, (384) though it comes from a large orifice, with a full stream, and is received into a clean vessel; if the spitting is suppressed, whilst the dyspnoea remains; or is increased, and, accompanied with pain, heaviness of the breast, an hard, small, quick pulse, and an intense heat; for, when these symptoms are increased on the fifth day, they prove mortal on the seventh; if the urine is highly red, and dark coloured, with a various and indistinct hypostasis, the disorder proves mortal within fourteen days: if the hypostasis is black, or furaceous, the disorder proves mortal sooner: if the pleurisy, being at first mild is increased on the fifth or sixth day, the patients are in danger on the seventh and twelfth, and are rarely cured, till after the fourteenth; if the back, side, and shoulders are highly red and painful; and if there is a flux, of which the matter is green, and highly fetid.

If the pleurisy is of the dry kind, on account of the defect of strength, the intense pain, the unsuitness of the matter for expulsion, the excessive contraction
and

and crispation of the vessels, and the excessive use of hot substances, the pain, at the same time, tending to the superior parts; if the tongue is at first, dry, fordid, livid or black, with a black blister on it; if all or most of these signs happen, the disorder, which is generally mortal of itself, is not easily cured; but for the most part, destroys the patient by a gangrene of the part, either in the side or in the lungs contiguous to it.

902. But when these signs (901) indicate that such a misfortune (890) has already seiz'd the patient, the most powerful remedies are without delay, to be used; nor are we to trust to the assistance of nature, nor the influence of gentler medicines provided the patient has a sufficient degree of strength remaining.

903. In this case, (902) therefore, deep eschars are forthwith to be excited in the part affected with the actual cautery; then they are to be covered with strong, cleansing medicines, and kept continually warm with penetrating fomentations; then large quantities of strong diluting, aperient, and antiseptic liquors are to be taken; for by these, if by any, the severity of the disorder will be mitigated: for this purpose,

Take of the leaves of scordium, jack-by-the-hedge, and white horehound, each two ounces: boil in two pints of water, with which mix of the oxymel of squils, eight ounces; of nitre, three drams; and of treacle vinegar, one ounce: of this mixture let the patient, every quarter of an hour, take two ounces as warm as possible.

904. But if the violence of the inflammatory cause produces the most severe pleuritic symptoms, neither to be removed by the assistance of nature (887, 888) nor by any antipleuritic medicine (890, 903) and if these symptoms are suddenly removed without a cause, so far as they depended on the inflammation, the pulse remaining quick, small, and intermittent, and the

sweat being small and cold, it is obvious, that a gangrene has already seized the inflamed parts. Hence a delirium, and soon after death happens especially if the thorax is of a livid colour. The same thing happens, if the patient, who expectorates a somewhat bilious spit, is relieved of his pain, without any manifest reason; for in this case, a delirium, the presage of death, produced by a gangrene, is present.

905. A pleurisy terminates in death, when its causes are so violent that the pain produced, suppressing all motions of the thorax, soon creates a mortal peripneumony (848) by stopping the circulation of the blood.

906. Hence the reason is obvious, why a peripneumony succeeds every violent pleurisy: why a pleurisy is generally mortal to old persons, child-bed and pregnant women: and why the swathing of the thorax with a bandage so allivates the disorder as to render it tolerable.

A PARAPHRENITIS.

907. **I**F a disease similar to the pleurisy seizes that part of the pleura which surrounds the diaphragm, or affects the diaphragm itself, a terrible species of disorder, call'd *paraphrenitis*, is produced.

908. This disease is far more frequent than is commonly believ'd, since when present, it either remains undiscovered, is neglected, or treated as if it was another disorder.

909. A paraphrenitis is known from an highly acute and continual fever; an inflammatory pain of the part affected, and intolerable on account of the nervous membranes. This pain is greatly augmented during inspiration, coughing, sneezing, repletion of the stomach, a nausea, vomiting, and a compression of the abdomen in discharging the fæces, or the urine. Hence the disorder is accompanied with an erect, small, quick, and suffocating respiration, performed only by the

the action of the thorax, the abdomen remaining at rest; with a perpetual delirium; a revulsion of the hypochondria, inwards and upwards; the risus sardonius; convulsions; madness; and a gangrene.

910. A paraphrenitis terminates in the same manner with a pleurisy; (884, 892, 896 897, 899) but, in consequence of the great and continual motion of the part affected, its necessity to life, and the tension of the nervous membranes, all the symptoms are quicker, and more fatal. Hence arises a purulent ascites.

911. Hence the cure of a paraphrenitis, requires the same distinctions and cautions with that of a pleurisy, and almost the same remedies, such only excepted, as the situation of the part affected cannot admit of. Emollient clysters, in consequence of their acting on the parts next to that affected, are often beneficial.

912. But when the diaphragm, previously inflam'd, comes to suppuration, and the abscess, breaking, discharges its pus into the cavity of the abdomen, the pus is there collected, congested, and becoming putrified, produces a tumor, a corrosion of the viscera, a violent tabes, and at last death.

913. This species of paraphrenitis, though known, is yet absolutely incurable.

F I N I S.

